

Canovision 8

- * • Use with MC-4B MECH. CHASSIS service manual (DY8-3391-501-201)
for repairing of mech. chassis part.
- For lens and adopters, refer to the service manuals issued separately.

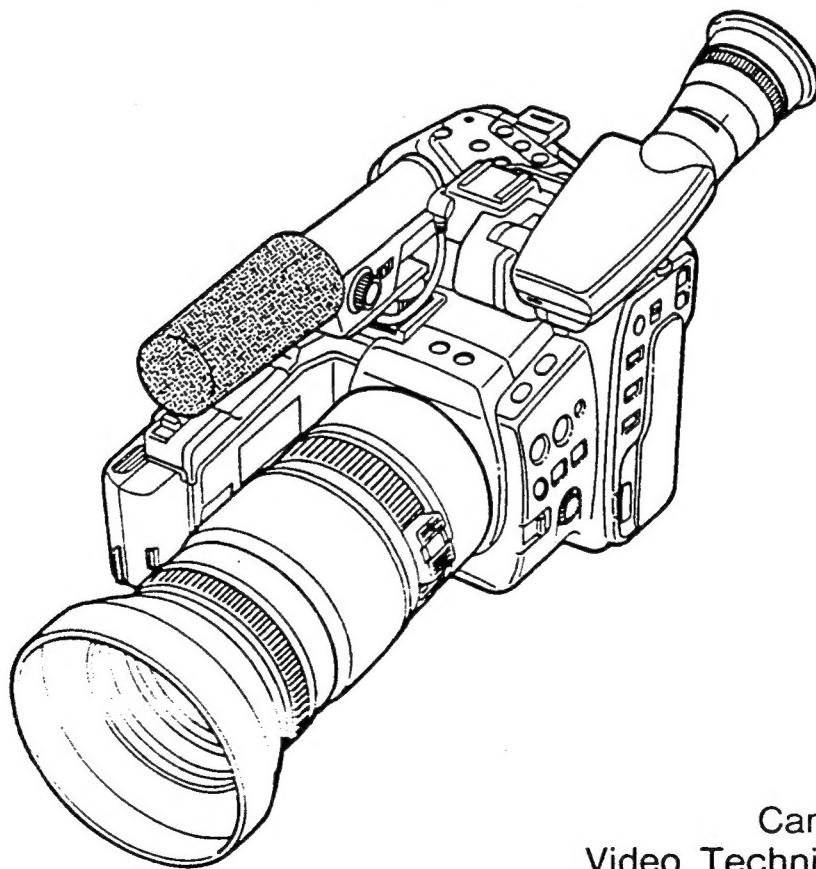
SERVICE MANUAL

EX2HiE

(REF. NO. D16-0430)

8mm Video Camera & Recorder

PAL



DY8-1160-430-000
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Canon Inc.
Video Technical Service Dept.
First Edition: Nov. 1993
Printed in Japan

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine CANON replacement parts.
- Especially critical parts in the power circuit block should not be replaced with other makes.
- Critical parts are marked with Δ in the schematic diagrams.
2. The primary source of X-ray radiation in this viewfinder is the picture tube. The tube used in the viewfinder is especially constructed to limit X-ray radiation emission. For continued X-ray radiation protection, the replacement tube must be same type as the original, CANON approved one.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

5-1 Leakage Current Cold Check

- 1) Unplug the AC cord and connect a jumper between the two prongs on the plug.
- 2) Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and $5.2M\Omega$. When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

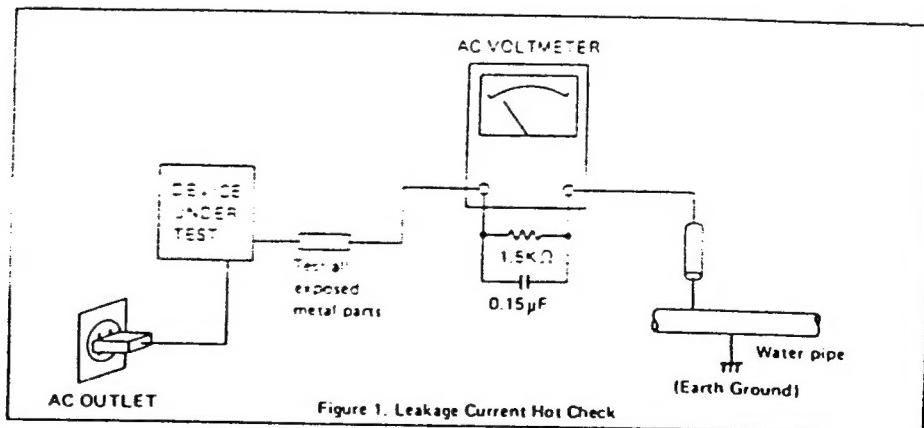
5-2 Leakage Current Hot Check

- 1) Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
- 2) Connect a $1.5K\Omega$ 10 watt resistor, paralleled by $0.15\mu F$ capacitor, between each exposed metallic parts on the unit and a good earth ground such as a water pipe, as shown in the figure below.
- 3) Use an AC voltmeter, with $1000\Omega/volt$ or more sensitivity, to measure the potential across the resistor.
- 4) Check all exposed metallic parts of the cover (Cable connection, Handle bracket, metallic cabinet. Screwheads, Metallic overlays, etc), and measure the voltage at each point.
- 5) Reverse the AC plug in the AC outlet and repeat each of the above measurements.
- 6) The potential at any point should not exceed 0.75V RMS.

A leakage current tester (FLUKE MODEL: 8000A equivalent) may be used to make the hot checks.

Leakage current must not exceed 0.5 milliamp.

In case a measurement is out side of the limits specified, there is a possibility of a shock hazard, and corrective action must be taken before returning the instrument to the customer.



CONTENTS

CHAPTER I. GENERAL DESCRIPTION OF PRODUCT

1. Product Overview	I - 1
2. New Technologies	I - 3
3. Circuit Description	I - 15

CHAPTER II. INFORMATION FOR REPAIR

1. List of Maintenance Tools and Supplies	II - 1
2. Preparation for Adjustment (Camera/Recorder)	II - 2
3. Adjustment After Replacement	II - 12
4. Trouble Shooting Guide	II - 13

CHAPTER III. DISASSEMBLING/ADJUSTMENTS

1. Disassembling	III - 1
2. Lens Adjustment	III - 8
3. Electrical Adjustments of Camera Section	III - 10
4. Electrical Adjustments (Recorder/EVF Section)	III - 17
5. EVF Adjustments	III - 24
6. Mechanical Adjustment of Recorder Section	III - 25

CHAPTER IV. PARTS CATALOG

1. Exploded Views	IV - 1
2. Electrical Parts List	IV - 15
3. Parts List	IV - 21

CHAPTER V. DIAGRAMS

1. Interconnection Diagram	V - 1
2. Block Diagrams	V - 2
3. Circuit Board/Schematic Diagrams	V - 7

CHAPTER I. GENERAL DESCRIPTION OF PRODUCT

1. Product Overview

1-1 Comparison with Model EX1Hi	I - 1
1-1-1 Functions	I - 1
1-1-2 Major component units	I - 2

2. New Technologies

2-1 Time code function	I - 3
2-1-1 Rewritable consumer time code (RCTC)	I - 3
2-1-2 Use of RC time code and data code	I - 4
2-1-3 Entry of RC time codes	I - 5
2-2 Index function	I - 6
2-2-1 Operating procedures	I - 7
2-3 Date scan/search function	I - 9
2-3-1 Operating procedures	I - 10
2-4 Digital special-effect functions	I - 11
2-4-1 New digital special-effect features	I - 13

3. Circuit Description

3-1 System control-servo circuit operation	I - 15
3-1-1 System control circuit	I - 15
3-1-2 Power supply circuit	I - 16
3-1-3 Pin functions of KEY microcomputer (IC001)	I - 20
3-1-4 Pin functions of MAIN microcomputer (IC601)	I - 23
3-1-5 Pin functions of SERVO microcomputer (IC104)	I - 26
3-1-6 Pin functions of RCTC control (IC1703)	I - 29
3-1-7 Data communication	I - 30
3-1-8 Safety functions	I - 33
3-1-9 Servo circuit	I - 37
3-2 Video circuit	I - 39
3-3 RCTC circuit	I - 40

1. Product Overview

Based on the preceding Model EX1Hi, this 8-mm video camcorder is designed to provide the state-of-the-art editing features including the RC time code/data code function and index function. Through LANC connection with a commercial RC time code editing unit, it enables the user to accomplish precise frame-by-frame editing.

This camcorder is standard-equipped with the remote controller having a shuttle ring, which is a first in its class. By turning the shuttle ring, the user can easily play back pictures at still framing, forward/reverse slow motion, forward/reverse 1x motion, forward/reverse 2x motion, fast-forwarding, or rewinding. Also, using the RC time code function, an image search can be carried out on a frame-by-frame basis.

1-1 Comparison with Model EX1Hi

1-1-1 Functions

Table I-1

Function	Model EX1Hi	Model EX2Hi
Hi8/normal format	Hi8/normal format selectable Hi8/normal format recording available in use of Hi8 tape	Hi8/normal format selected automatically Automatic format selection for videotape
Timer recording	o	x
Line in recording	x	o
Reverse slow playback	x	o
Reverse playback	x	o
Forward/reverse 2x motion playback	x	o
Index search/scan	x	o (Operation through remote controller)
Date search/scan	x	o (Operation through remote controller)
RC time code	x	o
Data code	x	o
Fine edit mechanism	x	o
Shuttle ring	x	o
Power consumption	Approx. 8.6 W	Approx. 8.8 W

Table I-2

Component		Differences from Model EX1Hi
Housing		The external color and printed characters have been changed, and the some keys have been changed.
Camera section	CCD	Newly designed (sensitivity: 6 dB up).
	AF P.C.B.	Some requirements for adjustment at plant have been changed.
	PROCESS 1, 2 P.C.B.	The LHI circuit has been removed because of the newly designed CCD. Some parts have been changed.
	C-KEY 1 P.C.B.	The INDEX MARK key has been added.
	C-KEY 2 P.C.B.	Identical
Recorder section	SYSCON-SERVO P.C.B.	The RC time code circuit has been added. The PB-RF detection circuit and the SP/LP detection circuit for searching have been added. (For RCTC control) The main and SERVO microcomputers have been designed newly. The E ² PROM IC for microcomputer adjustment data has been added. The DSP 5 V adjustment has been eliminated.
	VIDEO P.C.B.	The I/O IC, DSP IC, and character generator switching IC have been changed. (The character position adjustment (2) has been added.) The VIDEO 5 V adjustment has been eliminated.
	VIDEO SUB P.C.B.	Identical
	R-KEY 1 P.C.B.	The KEY microcomputer, LCD, and power IC have been changed.
	R-KEY 2 P.C.B.	Identical, except that the following key functions have been replaced. SW1905 TIMER → COUNTER/TC SW1906 LINE IN/OUT (NTSC) → SP/LP (PAL) SW1907 Hi8 [SP/LP (PAL)] → LINE IN/OUT
	TERMINAL P.C.B.	The number of connector pins has been changed.
	AUDIO 1, 2 P.C.B.	Identical
	RECORDER MECHA.	Identical, except that the HEAD AMPLIFIER P.C.B. has been changed.
EVF	EVF P.C.B.	Identical

2. New Technologies

2-1 Time code function

The time code function is used to record a count value for each video signal frame on tape (NTSC: 30 frames per second, PAL: 25 frames per second). In the conventional camcorders, tape counting has been performed using the capstan/reel frequency generator to cause a slight error in fast forwarding or rewinding. Compared with the conventional tape counting, the time code function does not produce a count error since the count data is recorded per frame on tape. In most types of the professional/broadcasting VTRs, the time function is incorporated to meet accuracy requirement for tape editing.

2-1-1 Rewritable consumer time code (RCTC)

In the 8mm videotape format, each track has the video recording region and the PCM audio recording region as shown below. The V-P guard (video-PCM protective area) is provided along the boundary of these regions. With RC time coding, biphase-modulated digital data is written onto the V-P guard area in the same manner as for PCM audio signals. This technique allows entry of time codes even on the previously recorded tape, i.e. the time codes are rewritable as implied by 'R' of RCTC.

Note that the lower part of the monitor screen is masked when the time codes are after-recorded.

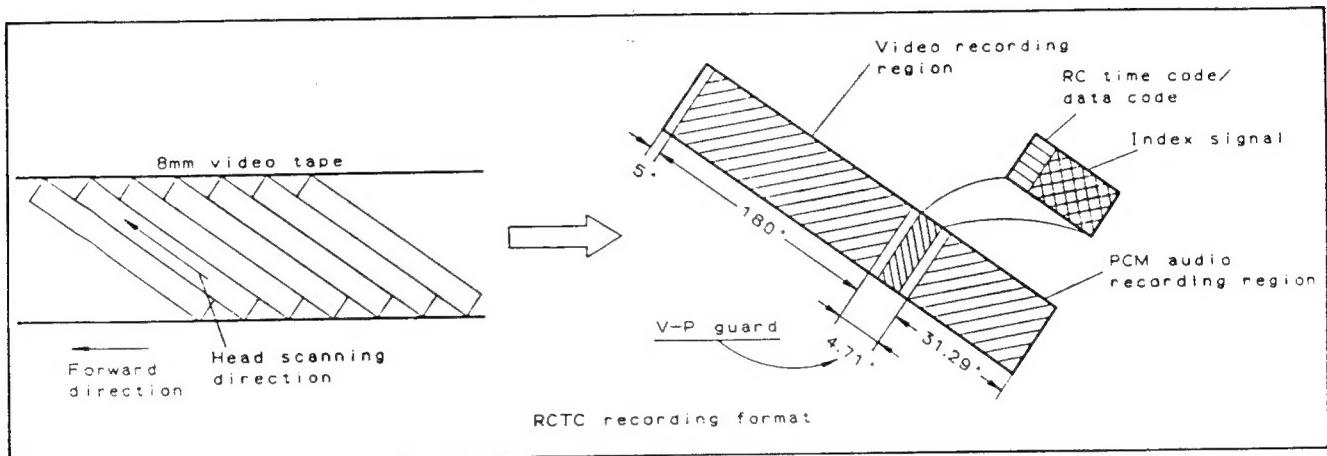


Fig. I-1

(1) RC time code recording format

Figure 2 shows the RC time code recording format. The RC time code recording area is provided after the index signal recording area. Between the start and end words, five words of data (40 bits) are recorded together with the CRCC byte (error detection byte).

Table 1 presents the allocation of 5-word data. In the present arrangement, the date recorded (year, month, day), time recorded (hours, minutes, seconds), or chapter data can be recorded can also be recorded in lieu of the time code.

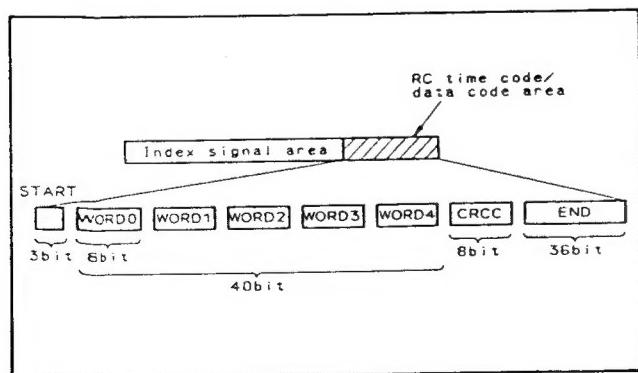


Fig. I-2

Table I-3

RC time code/data code recording arrangement

WORD 0	WORD 1	WORD 2	WORD 3	WORD 4
RC time code	Hours	Minutes	Seconds	Frame
Data code:	Year	Month	Day	-
Date recorded				
Data code:	Hours	Minutes	Seconds	-
Time recorded				
Chapter data				

(2) Difference from professional/broadcasting-use 8mm time code scheme

The professional/broadcasting-use 8mm time code scheme is structured on the precept that PCM recording is possible. Therefore, the time code is recorded on the vicinity of PCM region in a different format. That is, the RC time code scheme employed in this camcorder is not compatible with the professional/broadcasting-use time code scheme.

(3) Relationship with Sony RC time code scheme

In the RC time code scheme adopted for this camcorder, the tape pattern and data format are arranged to be identical with those of the Sony RC time code scheme. Therefore, these RC time code schemes are compatible with each other. It is possible to read and enter the time codes compatibly between these RC time code formats.

Also, the Canon RC time code scheme is compatible with the time and data coding of the 8mm video sub-code format (single-block 8mm video sub-code format only).

* 8mm video sub-code format

The 8mm video sub-code format is an optional specification video format that was published in February, 1992. It has upward compatibility with a variety of existing code formats. In addition to the above-mentioned time code, the 8mm video sub-code format includes the data code/index signal for date and time recording, the video control code for automatic fast-forwarding through particular recorded sections in playback, etc.

(4) Other time code formats

- ° LTC (Longitudinal Time Code) format The time code is recorded on the dedicated track using the stationary head.
- ° VITC (Vertical Interval Time Code) format ... The time code is inserted during a vertical blanking interval of video signal. Using the rotary head, it is recorded together with the video signal.

2-1-2 Use of RC time code and data code

Using the RC time code/data code function, a count value (elapsed time period) and date/time recorded can be automatically written per video signal frame onto tape during recording. In playback, the RC time code/data code can be read out. So, it is possible to use the RC time code/data code as described below.

(1) Use of RC time code

1) Enhancement of accuracy in video editing

In contrast with the conventional linear time counting that indicates a relative elapsed time (hours:minutes:seconds) with respect to a certain point on tape, the RC time coding indicates an absolute elapsed time (hours:minutes:seconds:frame) recorded on tape. Therefore, with the RC time code, a count error does not occur even in fast-forwarding or rewinding. In case that LANC connection is made with the 'RC time code compatible' video editing unit *1, it is possible to attain accuracy of editing within ±5 frames.

*1: RM-E500/RM-E700

(Sony video editing unit: Having the tape counter compatible with the RC time code format, it can control tape movement frame by frame.)

Recording unit:

Stationary-type Hi8 VTR supporting the fine synchronous edit feature *2, VTR having the LANC terminal *2, or 'Infrared remote control type' recording unit *3

*2: North American version: EV-S2000 (Sony: 8mm video deck)
European version : SLV-825/SLV-725 (Sony: VHS video deck)

*3: Using the timing adjustment tape furnished with the editing unit, it is required to adjust cut-in/out timing.

Still more, even for the recorded tape on which no RC time code was written, the RC time codes can be entered using the time code insert function. Thus, video editing can be carried out with high accuracy.

2) Easy cuing with high accuracy

Using the RC time code value, a particular scene can be located anywhere on tape. Since the RC time code value can be indicated on the viewfinder screen or TV screen during recording, playback, fast-forwarding or rewinding, a desired videotaped scene can be found out easily in a short time.

(2) Use of data code

- 1) In playback, the date and time recorded can be displayed on the TV screen as required. Unlike the conventional auto date recording function (superimposing function), the new method allows the user to hide the date/time in playback as desired.
- 2) Using the date scan/search function, it is possible to perform date-by-date scanning (the recorded pictures are played back for approx. 10 seconds each time the recorded date code is changed) and cue-up playback using the relative date number.

For instance, in case that a video diary of children has been created on a single videotape cassette, the user can browse through pictures using the data scan function or perform cue-up playback using the data search function.

2-1-3 Entry of RC time codes

The RC time codes can be written onto any videotape recorded with other 8mm camcorder or stationary VTR unit as well as that recorded with this camcorder.

RC time code input procedure:

- 1) Press the STOP key to set up the stop mode.
- 2) Rewind the tape back to its beginning, and select the playback pause mode.
- 3) Press the TIME CODE INSERT key on the remote controller. 'TC INSERT' will then blink on the viewfinder screen.
- 4) Press the PLAY ► KEY OR PAUSE II key to start playback. 'TC INSERT' is changed to steady indication, and the time codes are written starting from 0:00:00:00. When the RC time codes are written up to the end of tape, the tape is automatically rewound and then the stop mode is set up.

To cancel entry of RC time codes in the course, press the STOP key.

- * For time code entry on the videotape cassette that has RC time codes up to any intermediate point, set up the still playback mode at the part holding RC time codes, press the TIME CODE INSERT key, and then start playback. In this case, the new RC time codes are written sequentially to those recorded already on tape.

If new RC time codes are written starting from a part where no RC time code has been recorded, time coding begins with 0:00:00:00. In this case, entry of RC time codes is started from a location preceding the point of time code insertion (approx. two seconds before).

(To change the linear time count indication to the time code indication on the viewfinder/monitor screen, press the COUNTER/TC switch equipped above the LINE IN/OUT switch on the left cover.)

- * During the period of RC time code indication, counter reset and a tape return functions are not operable.
- * When the RC time code is after-recorded, the lower part of playback picture is masked, and the sound is muted.

2-2 Index function

The index function is designed to record the index signal before the RC time code/data code signal on tape. With this function, the user can perform index searching (cue searching) or index scanning (picture browsing). The index signals can be written during recording or playback (on recordable tape).

Described below are the index search and scan operations.

Index search

For index searching, select the index number corresponding to a desired point on tape, and press the FF or REW key. Thus, the tape is searched for the specified index number. Upon detection of it, playback is started.

Note: Index numbers are variable depending on the current location on tape. An index position relative to the current location on tape is used in index search operation.

Example) Search for index 02

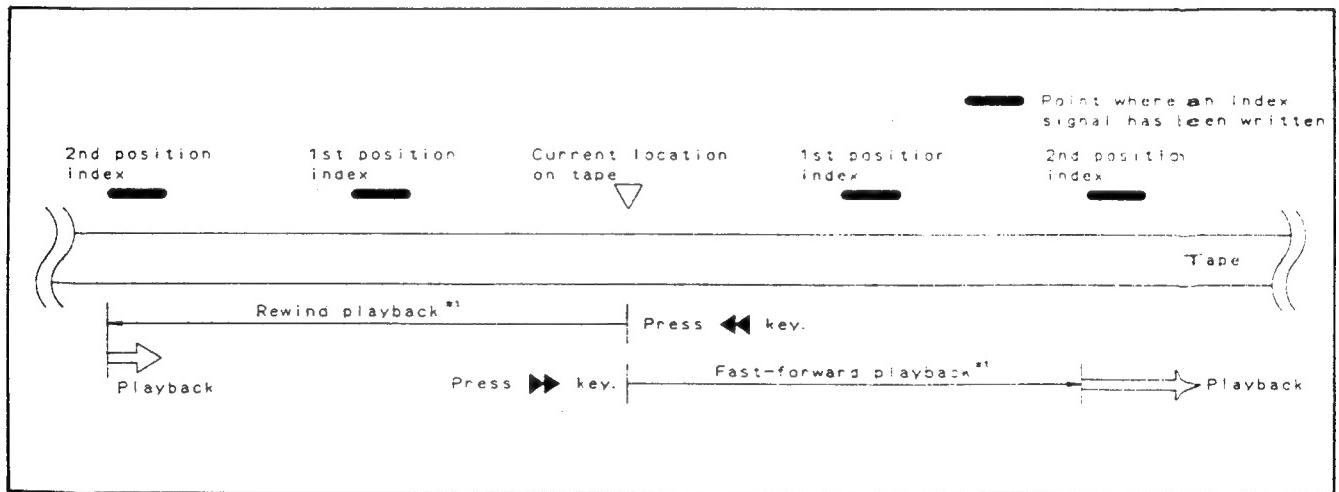


Fig. I-3

*1: If the FF or REW key is pressed in the playback/still playback mode for searching, fast-forward or rewind playback is performed. If the FF or REW key is pressed in the stop mode for searching, fast-forwarding or rewinding is performed.

▪ Index scan

Pictures are played back for approx. 10 seconds starting from each point of recorded index signal, and other pictures are skipped over.

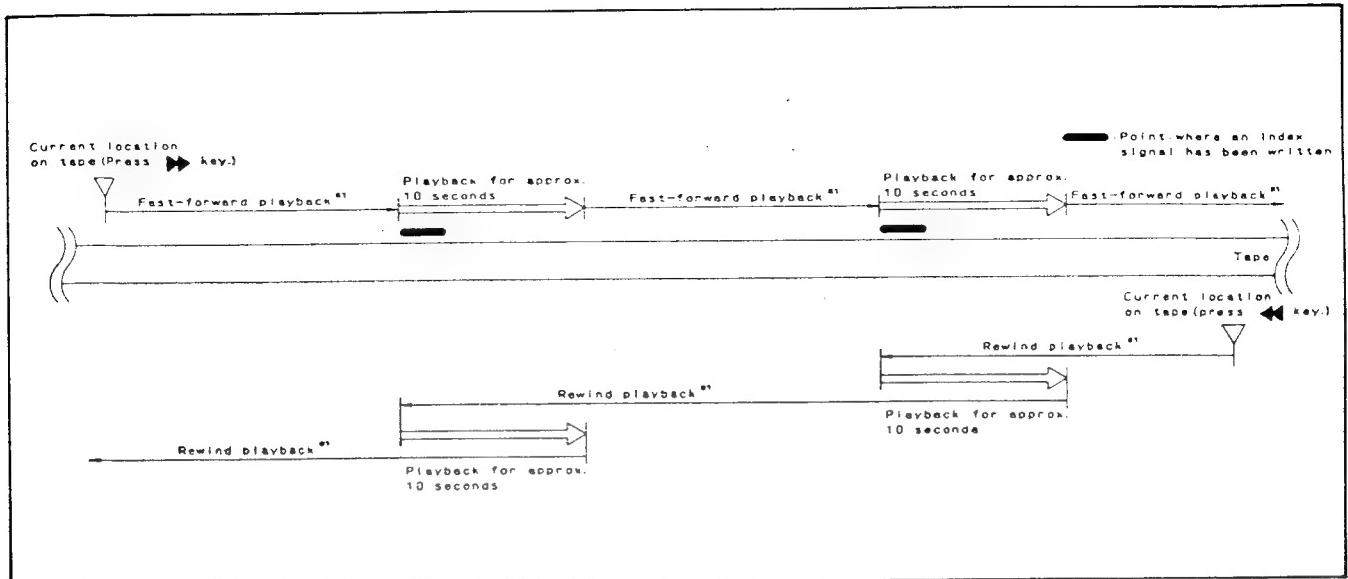


Fig. I-4

2-2-1 Operating procedures

▪ How to write index signals

The index signals can be written during recording or playback.

1) For writing index signals from the start of recording/playback

1. In the record pause mode or the still playback mode, press the INDEX MARK key on the main unit or remote controller. 'INDEX MARK' blinks on the viewfinder screen ('MARK' blinks on the LCD display).
2. When recording or playback is started, the index signal is written and 'INDEX MARK'/'MARK' becomes to be indicated steadily. Then, on completion of index signal entry (for approx. 10 seconds), 'INDEX MARK'/'MARK' disappears.

2) For writing index signals during recording/playback

1. During recording or playback (normal playback), press the INDEX MARK key on the main unit or remote controller when a desired point of index signal input is reached. 'INDEX MARK'/'MARK' is indicated on the viewfinder screen (LCD display). On completion of index signal entry (for approx. 10 seconds), 'INDEX MARK'/'MARK' disappears.

* An interval between index signals should be at least two minutes on tape. If this interval is too short, the index signal may not be detected correctly.

* During index signal input (while 'INDEX MARK'/'MARK' is indicated), do not stop recording or playback operation. If recording/playback operation is stopped before completion of index signal entry, the index signal will not be written correctly (not detectable).

* If the index signal is written onto the tape where data codes have been recorded, the data code is deleted at a part on which the index signal is entered.

• How to carry out index scanning/searching

- 1) In the playback, still playback or stop mode, press the INDEX key on the remote controller. Thus, the index scan/search ready state can be set up as shown below.

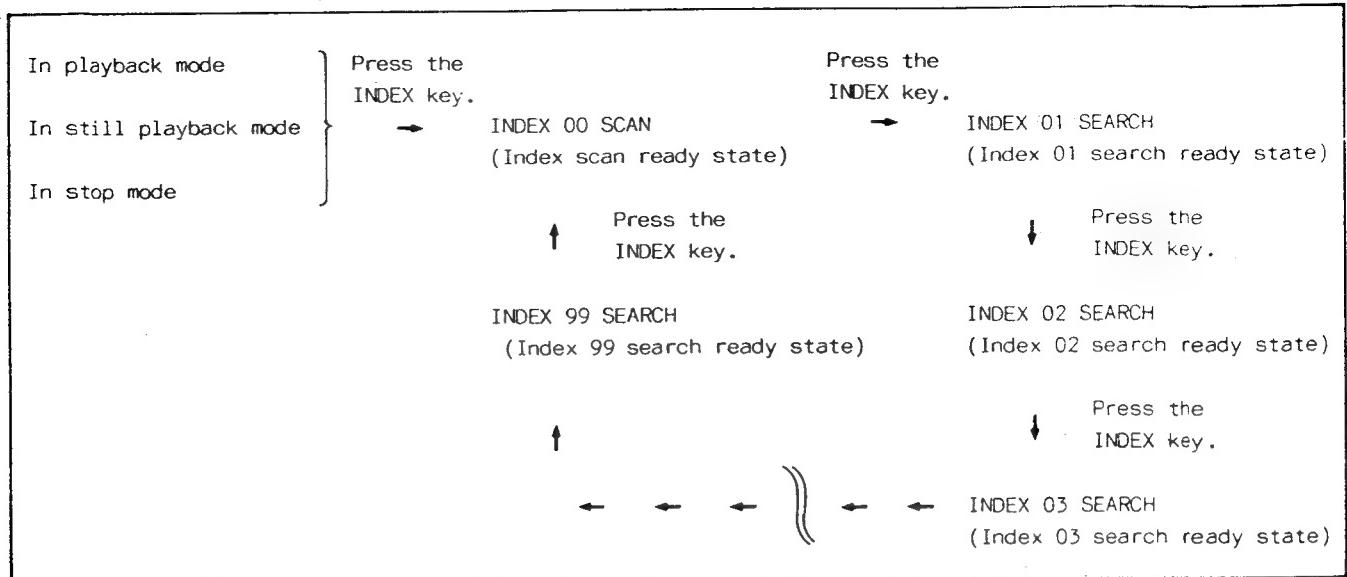


Fig. I-5

- 2) In the index scan/search ready state, press the FF ▶▶ key or ◀◀ REW key. Thus, index scanning or searching can be started, and the fast-forward playback mode *2 or the rewind playback mode *2 is set up.

*2: Fast-forwarding or rewinding is performed when the FF or REW key is pressed in the stop mode.

In index scanning, when the index signal is detected, playback is performed for approx. 10 seconds. Then, fast-forward playback or rewind playback is carried out until the next index signal is detected. This sequence of detection and playback is repeated. Each time the index signal is detected, the index scan indication on viewfinder screen advances as INDEX 01 SCAN, INDEX 02 SCAN, and so on. After INDEX 99 SCAN, INDEX 00 SCAN appears again in a cyclic fashion.

If the PLAY ▶ key is pressed during a period of 10-second playback, index scanning is canceled and playback is resumed.

In index searching, each time the index signal is detected, the index search indication on viewfinder screen is decremented as INDEX 03 SEARCH, INDEX 02 SEARCH, and so on. When INDEX 00 SEARCH is reached, cuing is completed and playback is resumed.

• How to cancel index searching/scanning

Press the STOP key.

• How to delete index signals

When any scene having the index signal to be deleted is played back during index scanning/searching, press the INDEX ERASE key on the remote controller within at least 10 seconds.

- In index scanning, the current on-tape location is skipped to the next index signal point.
- In index searching, normal playback is resumed.

- * The index signal cannot be erased on a write-protected videotape cassette.
- * When the index signal is erased, the RC time code and data code are also removed from the relevant area. On playback of the erased part, the RC time code is indicated as -:-:-:- (bars).
- * When using the 'RC time code compatible' editing unit, rewrite the RC time code onto the erased area.
- * The index signals written with the video deck having the index function can be detected on this camcorder, but they may not be erased in some cases. Also, the index signals written with this camcorder can be detected on the video deck, but they may not be erased in some cases.
- * If PCM after-recording is made on the index-signal-recorded area using other 8mm video camcorder or deck, the index signal may be deleted.

2-3 Date scan/search function

Whereas the index scan/search function uses the index signals, the date scan/search function uses date code data recorded on tape. Since the date code can be recorded automatically during shooting, it is not required to enter any special signal as in use of the index function. However, the date data is used in lieu of the index signal, scanning/searching cannot be made if recording on cassette has been completed on the same day.

° Date search

Select a date count corresponding to the desired date, and press the FF or REW key. Thus, searching is performed according to the selected date count, and then playback is started.

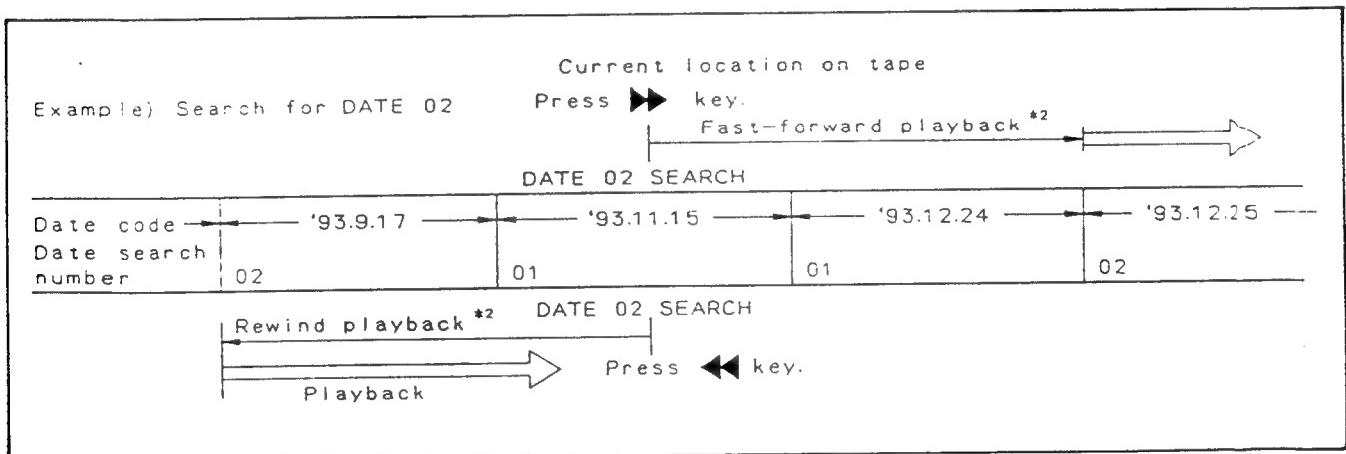


Fig. I-6

*1: In case that searching is attempted in the playback or still playback mode.
If searching is made in the stop mode, fast-forwarding is performed (except for the PAL version).

*2: In case that searching is attempted in the playback or still playback mode.
If searching is made in the stop mode, rewinding is performed (except for the PAL version).

* A date search number indicates a relative date position with respect to the current location (0) on tape. So, the date search number varies depending on the current location on tape.

° Date scan

Playback is carried out for approx. 10 seconds starting from each date point, and other pictures are skipped over.

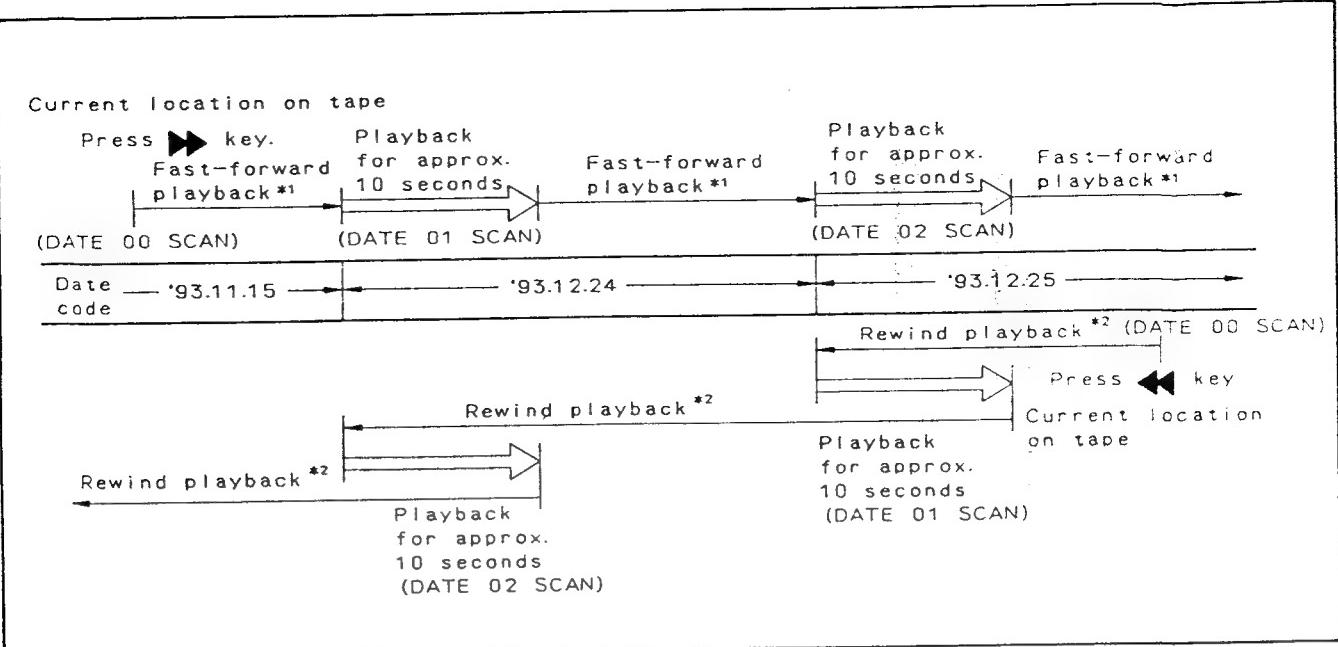


Fig. I-7

*1: In case that searching is attempted in the playback or still playback mode.
If searching is made in the stop mode, fast-forwarding is performed (except for the PAL version).

*2: In case that searching is attempted in the playback or still playback mode.
If searching is made in the stop mode, rewinding is performed (except for the PAL version).

2-3-1 Operating procedures

° How to carry out date searching/scanning

- 1) In the playback, still playback or stop mode (except the stop mode in the PAL version), press the DATE SEARCH key on the remote controller. Thus, the date scan/search ready state can be set up as shown below.

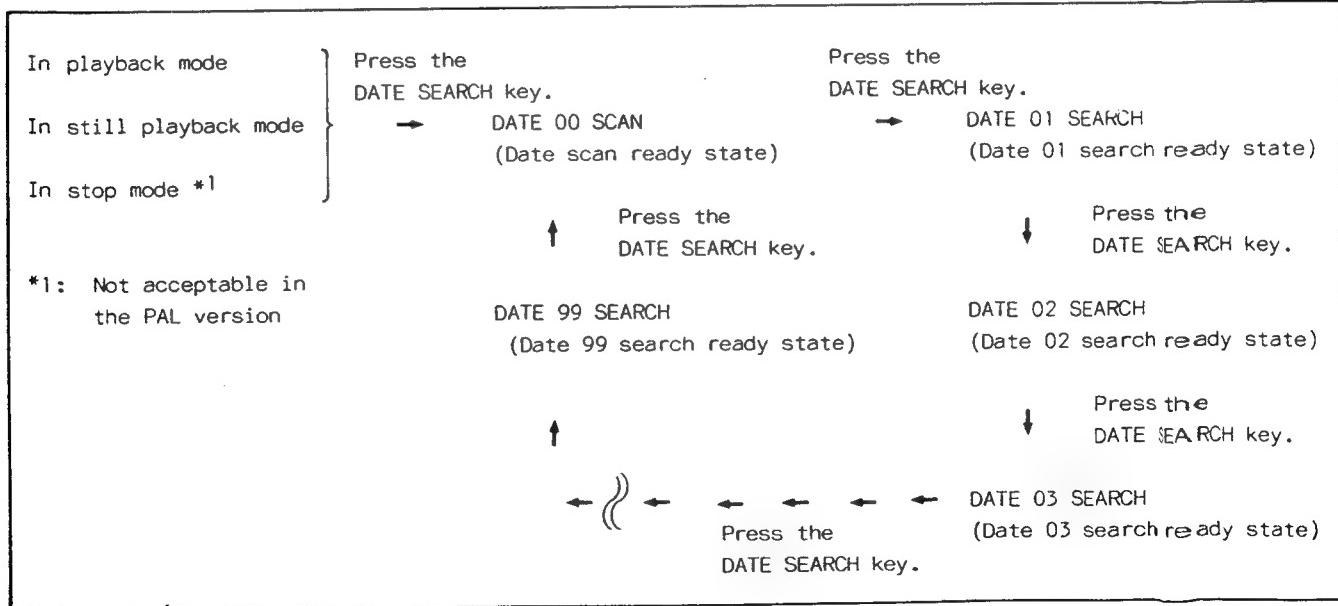


Fig. I-8

- 2) In the date scan/search ready state, press the FF ►► key or ◀◀ REW key. Thus, date scanning or searching can be started, and the fast-forward playback mode *2 or the rewind playback mode *2 is set up.

*2: Fast-forwarding or rewinding is performed when the FF or REW key is pressed in the stop mode (except for the PAL version).

- In date scanning, when the date code is changed, playback is performed for approx. 10 seconds. Then, fast-forward playback *2 or rewind playback *2 is carried out until the next date code is detected. This sequence of detection and playback is repeated.

*2: Fast-forwarding or rewinding is performed when the FF or REW key is pressed in the stop mode (except for the PAL version).

Each time the date code is changed, the date scan indication on viewfinder screen advances as DATE 02 SCAN, DATE 03 SCAN, DATE 04 SCAN, and so on. After DATE 99 SCAN, DATE 00 SCAN appears again in a cyclic fashion (then DATE 01 SCAN, DATE 02 SCAN, and so on are indicated).

If the play ► key is pressed during a period of 10-second playback, date scanning is canceled and playback is resumed.

- In date searching, each time the date code is changed, the date search indication on viewfinder screen is decremented as DATE 03 SEARCH, DATE 02 SEARCH, and so on. When DATE 00 SEARCH is reached, cuing is completed and playback is resumed.

• How to cancel date scanning/searching

Press the STOP key.

2-4 Digital special-effect functions

This camcorder is equipped with the following digital special-effect functions.

Included for recording are:

- 1) Close-up
- 2) Overlap
- 3) Freeze
- 4) Art freeze
- 5) Slow shutter
- 6) Wipe

(In the PAL version, the cinema and split functions are also incorporated; eight special recording functions in total.)

Included for playback are:

- 7) Stroboscopic effects (7 kinds of effects)
 - 8) Art effects (4 kinds of effects)
- (These playback special functions are incorporated in the NTSC version only.)

Note that the wipe, cinema and split effect functions are new features.

The operating procedures for these functions are the same as those for Model L1/EX1Hi. Sequential selection with the D.E. SELECT key is adopted.

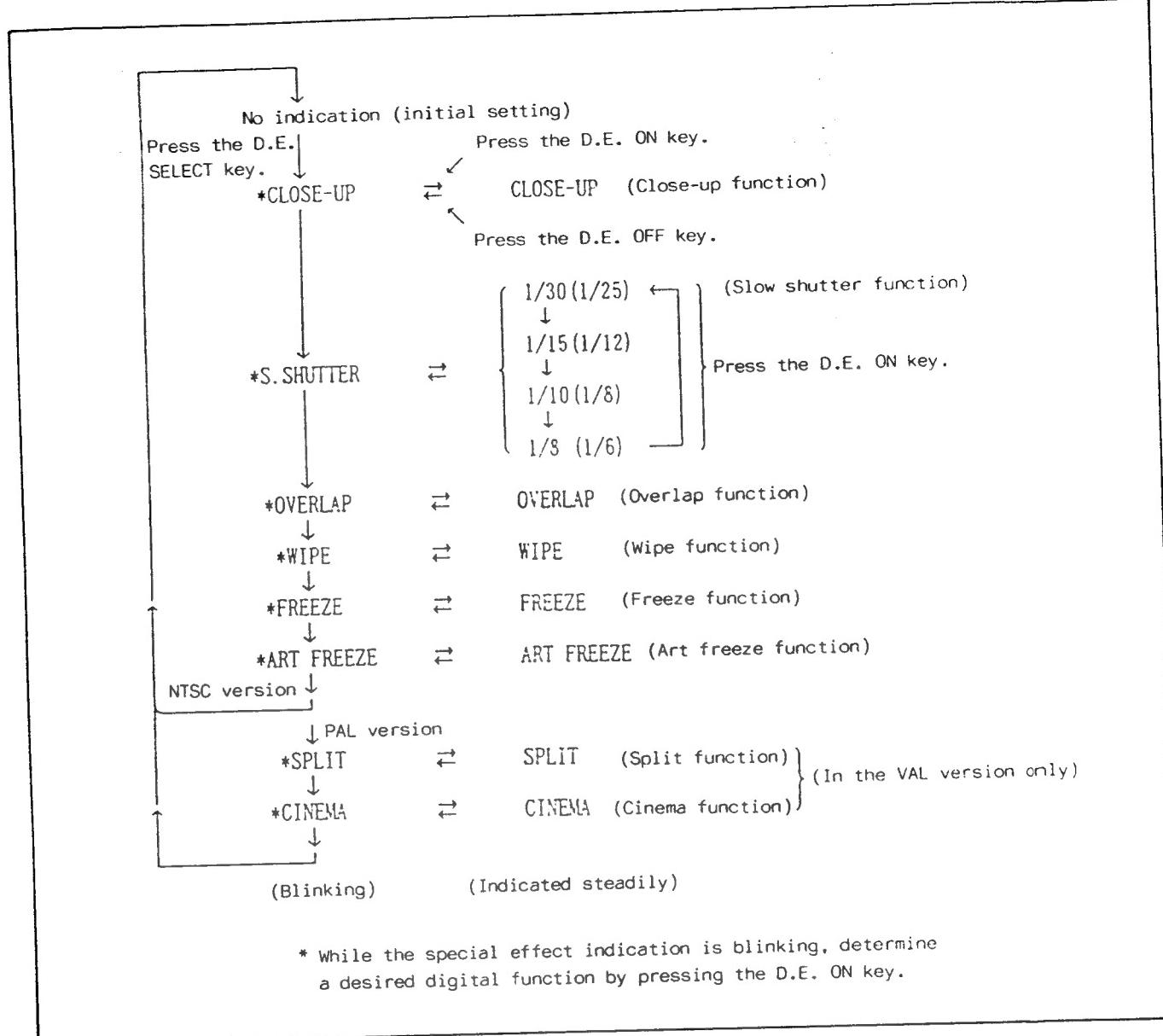


Fig. I-9

In Model L1/EX1Hi, the digital special-effect circuit is activated by turning the camera mode select switch to 'M' (MANUAL) during recording. In this camcorder, the digital special-effect circuit cannot be activated just by turning the camera mode select switch to 'M' position. When the digital special-effect indication is presented on the viewfinder screen (steady or blinking indication), the digital special-effect circuit can be activated for reducing power consumption.

2-4-1 New digital special-effect features

(1) Wipe effect function

The wipe effect function allows changeover from the last recorded still picture (field memory output image) to the normal motion picture starting from the leftmost position. It can provide a kind of scene presentation different from that with the overlap function. This wipe function has the following modes (same as in the overlap function):

- 1) Field memory image check mode
- 2) Rehearsal (demonstration) mode in the stop state

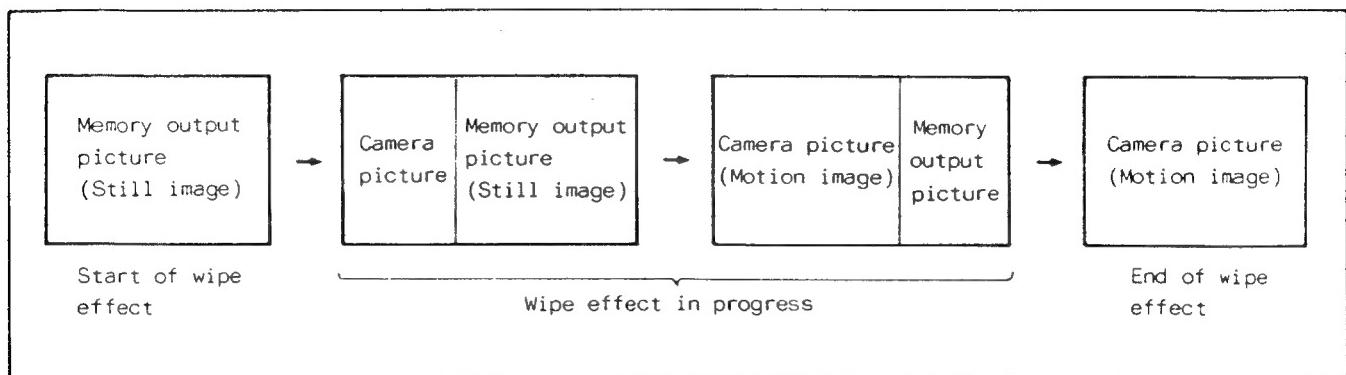


Fig. I-10

* Normal wipe effect operation

- 1) Press the D.E. SELECT key to blink the wipe mode indication. Then, press the D.E. ON key to choose the wipe effect function.
- 2) Set up the record pause mode by pressing the START/STOP button. Thus, the camera EE picture is read into the field memory.
- 3) Press the START/STOP button again to restart shooting. At this step, the wipe effect function turns on. Thus, the camera EE picture is changed to the memory picture (still image held in field memory). In wiping, rightward changeover to the EE picture is made starting from the left most position of screen.

Wiping can be performed until the wipe mode is canceled by pressing the D.E. OFF key.

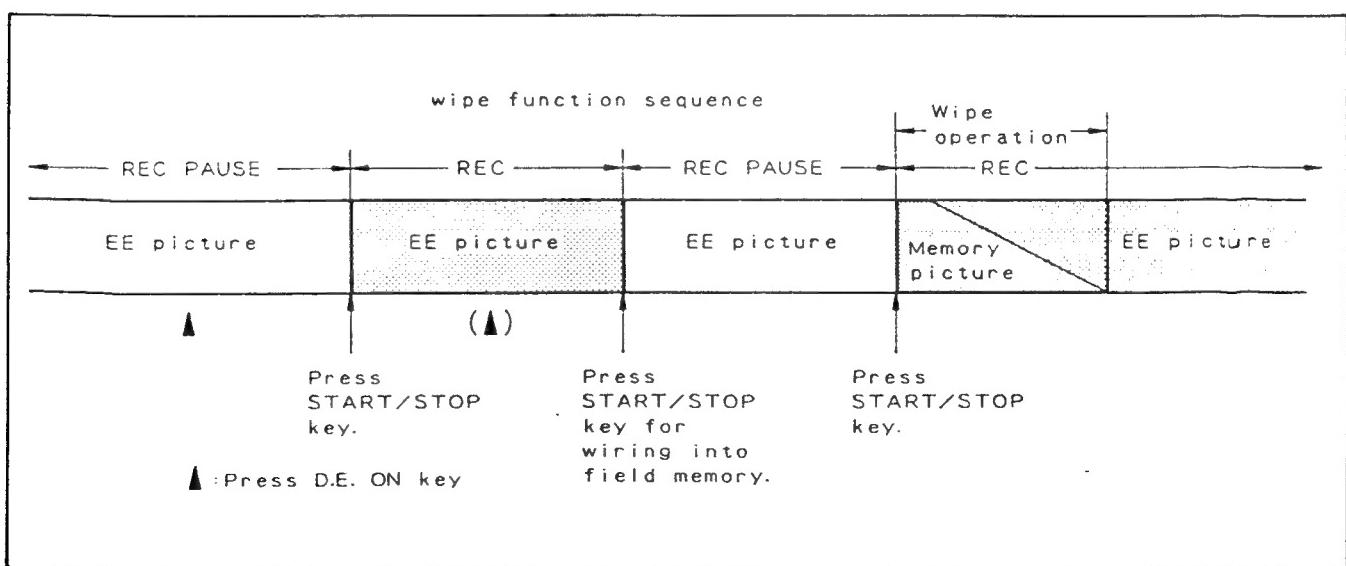


Fig. I-11

* Field memory image check mode of wipe function

This mode allows the user to check an image stored in the field memory. By pressing the D.E. ON key in the REC PAUSE mode, the user can check a memory picture and wipe operation.

- 1) Press the D.E. ON key in the REC PAUSE mode. Thus, the memory image check mode is set up and a picture held in the field memory is output. While the D.E. ON key is held down, the memory picture is output continuously.
- 2) Release the D.E. ON key. Then, the wipe effect function turns on. In wiping, rightward changeover to the EE picture is made starting from the leftmost position of screen.

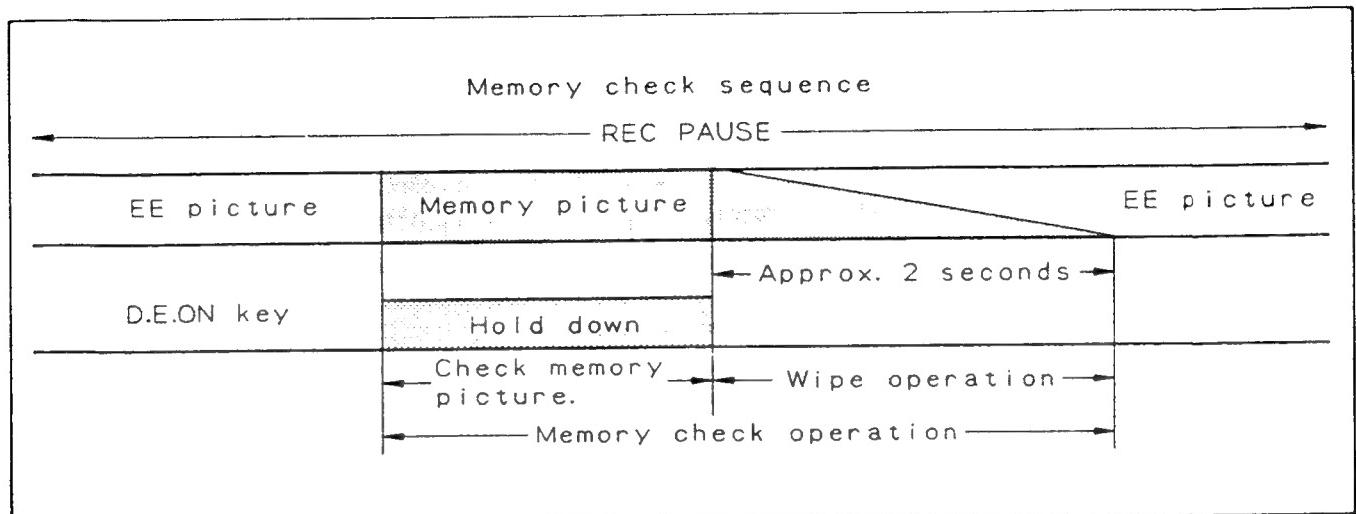


Fig. I-12

* Rehearsal mode of wipe function

This mode is provided for demonstration of the wipe function without actual recording.

For wipe effect rehearsal, the wipe mode must be chosen with the D.E. SELECT key in the stop mode ('WIPE' blinking).

- 1) Press the D.E. ON key to set up the rehearsal mode. The current EE picture is stored into the memory, and then the memory picture is output. While the D.E. ON key is held down, the memory picture is output continuously.
- 2) Release the D.E. ON key. Then, the wipe effect function turns on. In wiping, rightward changeover to the EE picture is made starting from the leftmost position of screen.

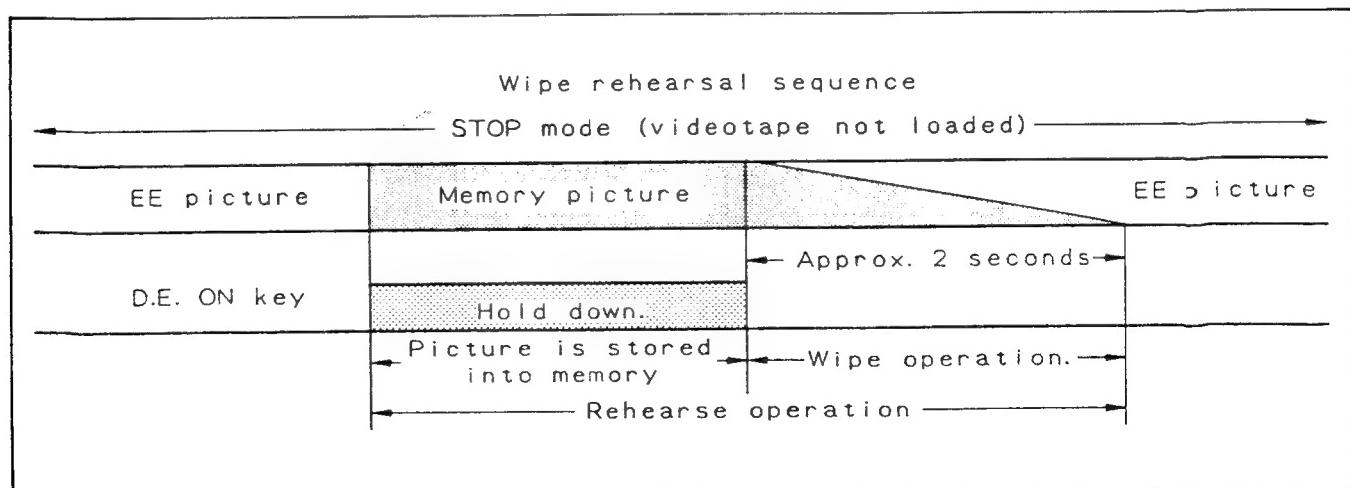


Fig. I-13

3. Circuit Description

The circuit operations of the camera AF section in this camcorder are almost the same as those in Model EX1Hi. Please refer to the Service Manual for Model EX1Hi/A2Hi.

3-1 System control-servo circuit operation

3-1-1 System control circuit

System control operations are primarily carried out under control of MAIN microcomputer (IC1601), KEY microcomputer (IC001) and SERVO microcomputer (IC104). Input devices/input signals for system control include operation keys, mechanism switches, error detection signal, servo data, wireless remote controller and RCTC data. These signals are processed and judged by the three microcomputers for control of various operations. Among the microcomputers, information is exchanged via a serial communication, which is controlled by the MAIN microcomputer (IC1601).

Differences from EX1Hi are as listed below.

- (1) Addition of E²PROM (IC1603) for storing discharging and switching point adjustment data
- (2) Control and communication between RCTC control (IC1506) and SERVO microcomputer (IC104) due to addition of RCTC function
- (3) Direct LANC communication by SERVO microcomputer (IC104) through LANC IN/OUT IC

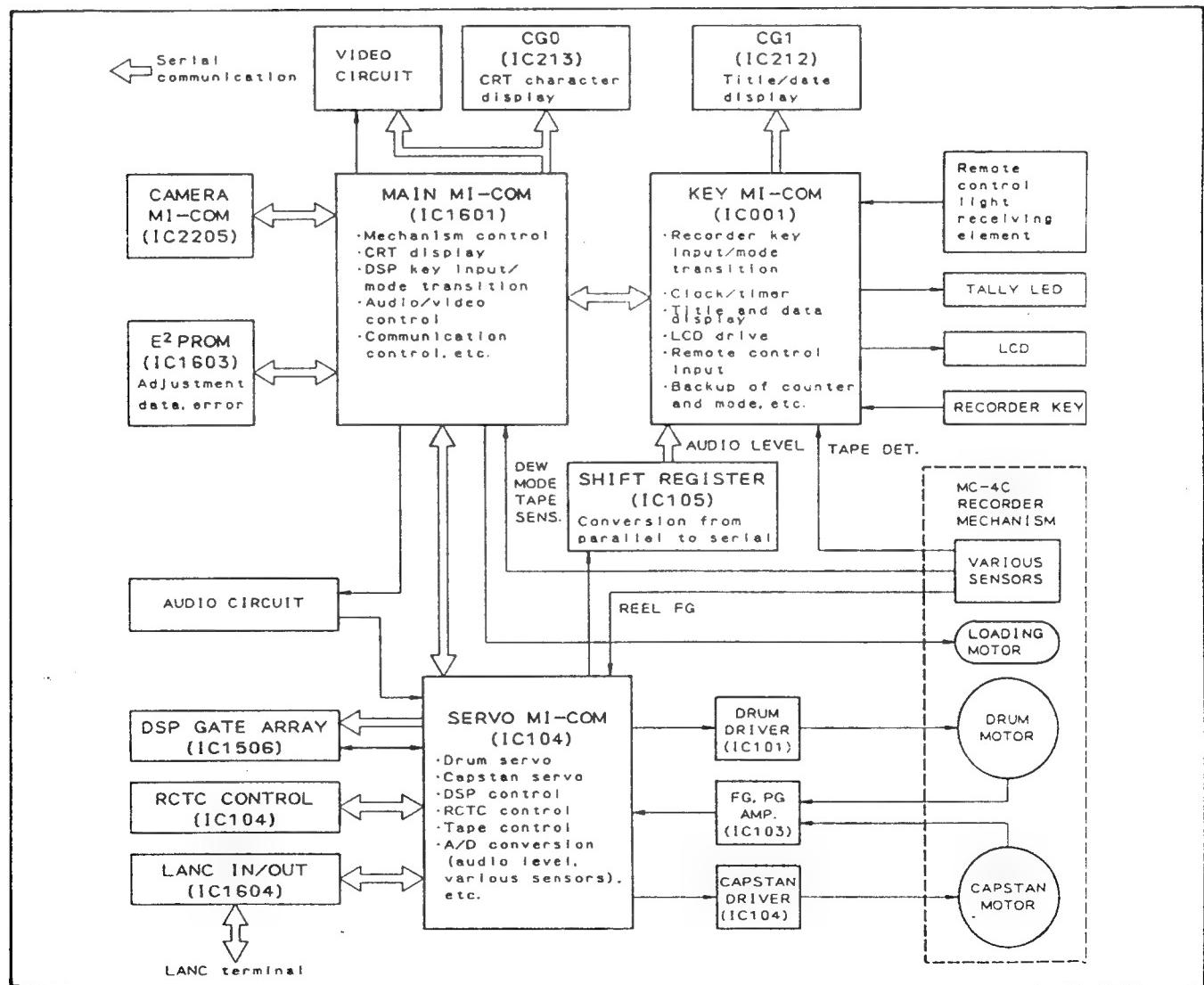


Fig. I-14

3-1-2 Power supply circuit

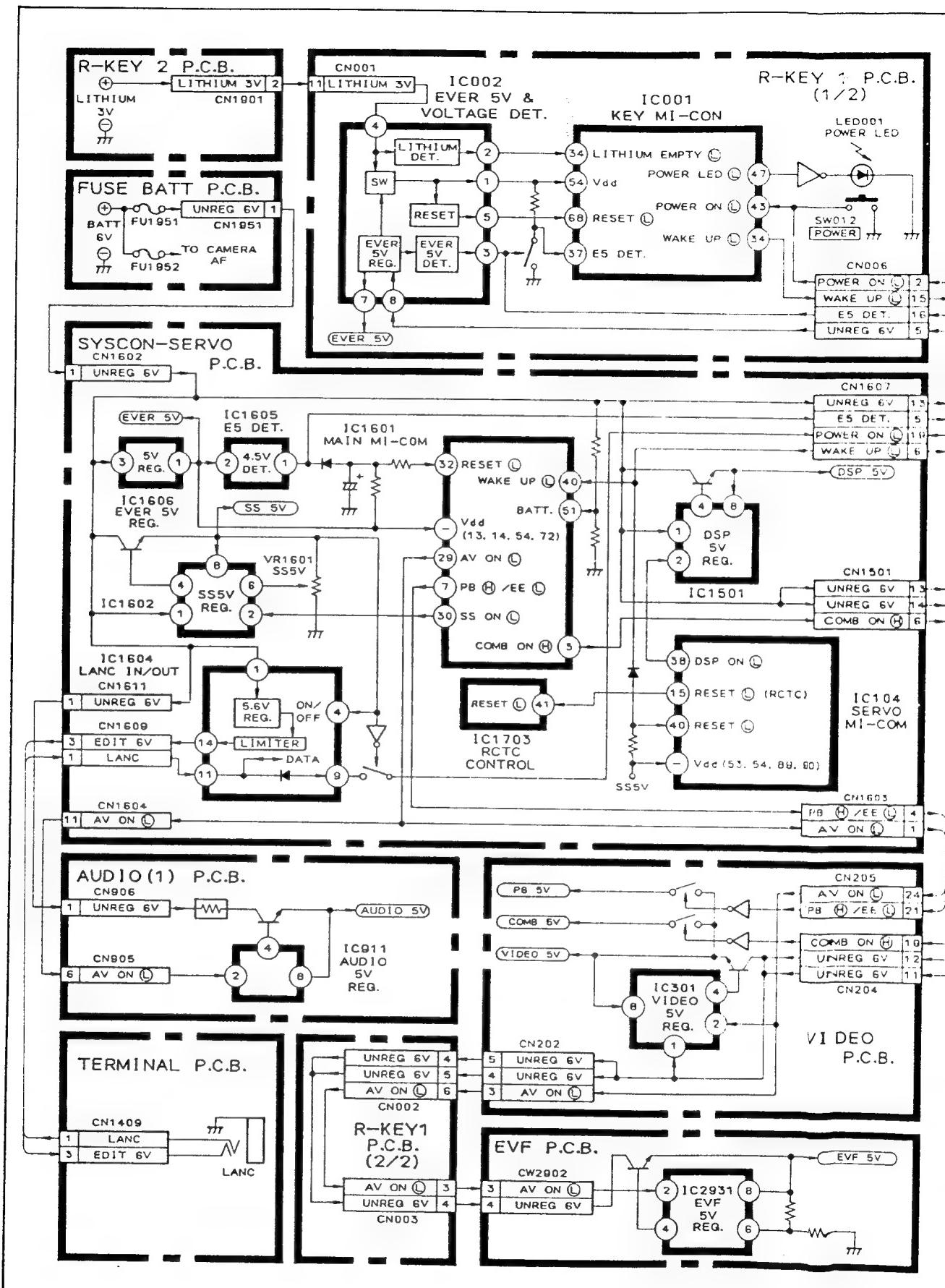


Fig. I-15

(1) Kinds of power sources

Recorder power supply is generated from UNREG 6V from the battery/AC adapter. Independently from UNREG 6V, LITHIUM 3V is supplied to the KEY microcomputer (IC001) for backing up the auto date and counter. Each power source is detailed below.

EVER 5V (SYSCON-SERVO P.C.B., R-KEY 1 P.C.B.)

- ° SYSCON-SERVO P.C.B.

When UNREG 6V is supplied (power is supplied to the battery terminal), EVER 5V is output from IC1606 on the SYSCON-SERVO P.C.B. This power output is always issued as long as the power unit is provided, and it is used mainly for power supply to the MAIN microcomputer (IC1601).

- ° R-KEY 1 P.C.B.

When UNREG 6V is supplied (power is supplied to the battery terminal), EVER 5V is output from IC002 on the R-KEY 1 P.C.B. This power output is always issued as long as the power unit is provided, and it is used mainly for power supply to the KEY microcomputer (IC001).

SS 5V (SYSCON-SERVO P.C.B.)

When turning ON the power switch, SS ON (L) is output from the MAIN microcomputer (IC1601-30 pin). In response to this signal, IC1602 turns ON, and the comparison voltage determined by VR1601 is compared with the internal reference voltage. According to the result of this comparison, the output driver is controlled so that a constant voltage of 5 V is obtainable.

This power line serves the system control-servo circuit.

DSP 5V (SYSCON-SERVO P.C.B.)

When DSP is operable (in camera mode, PB, etc.), DSP ON (L) is output from the SERVO microcomputer (IC104-38 pin). In response to this signal, IC1501 turns ON, the output driver is controlled so that a constant voltage of 5 V is obtainable.

This power line serves the DSP circuit.

VIDEO 5V (VIDEO P.C.B.)

According to AV ON (L) output from the MAIN microcomputer (IC1601-29 pin), IC301 turns ON and the output driver outputs a constant voltage of 5 V as in SS 5V.

This power line serves the video circuit.

PB 5V (VIDEO P.C.B.)

According to PB (H)/EE (L) output from the MAIN microcomputer (IC1601-22 pin) in PB, the transistor turns ON and VIDEO 5V is output as PB 5V.

This power line serves the video circuit section exclusively used for playback.

COMB 5V (VIDEO P.C.B.)

Composite signal. According to COMB ON (L) output from the MAIN microcomputer (IC1601-3 pin) in LINE IN and PB, the transistor turns ON and VIDEO 5V is output as COMB 5V.

This power line serves the Y/C separating section of video circuit.

AUDIO 5V (AUDIO (1) P.C.B.)

5 V power supply to the AUDIO line is generated on the AUDIO (1) P.C.B. As a trigger signal, AV ON (L) is used the same as for VIDEO 5V.

EVF 5V (EVF P.C.B.)

5 V power supply to the EVF line is generated on the EVF P.C.B. As a trigger signal, AV ON (L) is used the same as for VIDEO 5V.

EDIT 6V (SYSCON-SERVO P.C.B.)

This 6 V power is supplied from the jack of terminal board to the editing machine side. (Voltage value is about 5.6 V to be exact.)

With SS 5V used as a trigger signal, IC1604 outputs EDIT 6V.

LITHIUM 3V (R-KEY 2 P.C.B.)

LITHIUM 3V supplied from the lithium battery is used as a backup power supply for the auto date and counter under control of the KEY microcomputer (IC001) when the power unit is disconnected. When the power unit is mounted, EVER 5V is supplied to the KEY microcomputer (IC001) via IC002 8-3 pins.

(2) Turning on power supply

MAIN microcomputer resetting on connection of power supply

When connecting the power unit to the battery terminal, EVER 5V is supplied as a power source from IC1606-1 pin to the VDD terminal of MAIN microcomputer (IC1601). At this time, the E5 DET. signal of IC1605-1 pin rises with a time lag of about 300 (ms) from EVER 5V. During this time period, the RESET terminal of MAIN microcomputer pin 7 remains in the 'Low' status so that initial resetting is made. After completion of initialization, MAIN microcomputer enters STAND-BY mode, and stand-by status is set. When the battery starts discharging and the charge on UNFREG 6V line drops to 4.5 V or less, the E5 DET. signal turns to 'Low'. As a result, MAIN microcomputer is reset and shut-off status is set.

KEY microcomputer resetting on connection of power supply

The KEY microcomputer (IC001) is reset in two cases below.

- 1) After connecting the lithium battery with the main battery disconnected, the main battery has been connected.
- 2) The main battery has been connected with the lithium battery disconnected.

In these cases, the IC002-5 pin turns to 'Low' on connection of the main battery and the KEY microcomputer is reset.

Note that IC002 issues no output from pin 1 even when connecting the lithium battery with the main battery disconnected. Once the main battery is connected, power supply is output from pin 1.

The KEY microcomputer selects either status below depending on whether or not the main battery is connected.

- 1) In case the main battery is not connected (provided the lithium battery is connected):

The E5 DET. signal of IC002-3 pin turns to 'Low' and the transistor turns OFF. Because LITHIUM 3V is supplied to pin 37 of KEY microcomputer, this pin turns to 'High'. As a result, KEY microcomputer judges that the main battery is not connected. In this status, the KEY microcomputer performs backups of auto date, title, counter memory, etc.

- 2) In case the main battery is connected:

The E5 DET. signal of IC002-3 pin turns to 'High' and the transistor turns ON. As a result, KEY microcomputer judges that the main battery is not connected, and the stand-by status is set.

Operation at power switch ON

After completion of the above-mentioned resettings, KEY microcomputer and main microcomputer are set in the STAND-BY mode. When 'Low' pulse is input to pin 43 of KEY microcomputer by pressing the power switch in the present status, KEY microcomputer starts and outputs WAKE UP (L) from pin 34. MAIN microcomputer starts when the WAKE UP (L) signal is input to pin 40, and outputs SS ON (L) and AV ON (L) to turn on each power supply. When SS 5V turns ON, it is supplied as a power source to the VDD terminal of SERVO microcomputer (IC101). At this time, the WAKE UP (L) signal still maintains the 'Low' status and pin 40, or RESET terminal of SERVO microcomputer is also in the 'Low' status. Therefore, SERVO microcomputer is reset and operation starts.

After the above operations, the WAKE UP (L) signal turns to 'High' and POWER LED (L) signal is issued from pin 47 of KEY microcomputer to light the power LED.

Operation at power switch OFF

When 'Low' pulse is input to pin 43 of KEY microcomputer by pressing the power switch with power supply turned ON, POWER LED (L) signal of pin 47 turns to 'High' to put out the power LED. At the same time, POWER OFF is reported to MAIN microcomputer via serial data communication. MAIN microcomputer sets the mechanism in the STOP mode, and then turns off power supply.

3-1-3 Pin functions of KEY microcomputer (IC001)

Table I-4 (1/3)

Pin No.	Signal designation	I/O	Function									
1	S12	O	LCD segment output.									
2	?											
12	S23											
13	KEY OUT 0	O										
2	?											
16	KEY OUT 3											
17	CG1-CS	O	Chip select signal for serial data communication with CG1 (IC212). Serial data communication is carried out while this signal is 'High'.									
18	CG1-STROBE	O	Data read-in instruction signal to CG1 (IC212). On completion of data transfer, this signal goes 'High' to indicate the validity of data.									
19	SHIFT \odot /LOAD \oplus	O	Parallel-to-serial conversion control signal for audio data. ° When this signal becomes 'High', the 8-bit data input to IC105 is stored into each register a synchronously with clocking. ° When this signal becomes 'Low', each flip-flop circuit performs sequential shift on the leading edge of clock pulse.									
20	SHIFT-CLOCK	O	Shift clock signal used in the parallel-to-serial conversion IC (IC105) for audio data.									
21	COM0	O	LCD common lines.									
2	?											
24	COM3											
25	-	-	Connected with pin 26 (unused).									
26	-	-	Connected with pin 25 (unused).									
27	NC	-	Open.									
28	NC	-	Open.									
29	ME \oplus /MP \odot	I	ME/MP tape check input. Through detection of the ID hole on cassette, it is checked whether the ME or MP tape is used. This signal becomes 'High' when the ME tape is used, and it becomes 'Low' when the MP tape is used.									
30	SAFETY TAB \oplus	I	Used for preventing unintentional erasure. This signal becomes 'High' when the safety tab of cassette is set to the write-inhibit position.									
31	SEL A	I	Television system identification input.									
32	SEL B	I	<table border="1"> <tr> <td>Television system Signal</td> <td>USA</td> <td>PAL</td> </tr> <tr> <td>SEL A</td> <td>H</td> <td>L</td> </tr> <tr> <td>SEL B</td> <td>H</td> <td>H</td> </tr> </table>	Television system Signal	USA	PAL	SEL A	H	L	SEL B	H	H
Television system Signal	USA	PAL										
SEL A	H	L										
SEL B	H	H										
33	Vss	-	Connected with ground.									
34	LITHIUM EMPTY \odot	I	This signal goes 'Low' when the terminal voltage of lithium battery decreases below approx. 2.7 V.									
35	HiMP \oplus	I	HiMP tape identification input. This signal goes 'High' when the HiMP tape is used (recognized through detection of the ID hole on cassette).									
36	-	I	No use.									
37	E5 DET.	I	Used for detection of EVER 5V. This signal checks whether the main battery back is loaded or not, and selects the microcomputer mode accordingly. When the EVER 5V power is present (the main battery pack is loaded), this signal goes 'Low'.									

Table I-4 (2/3)

Pin No.	Signal designation	I/O	Function
38	KEY-CS	I	Chip select signal for serial data communication with the MAIN microcomputer (IC1601). Serial data communication is carried out while this signal is 'High'.
39	S-CLOCK	O	Clock output for serial data communication with the MAIN microcomputer (IC1601) and CG1 (IC212).
40	S-DATA OUT	O	Data output for serial data communication with the MAIN microcomputer (IC1601) and CG1 (IC212).
41	S-DATA IN	I	Data input for serial data communication with the MAIN microcomputer (IC1601).
42	REMOCON DATA	I	This signal indicates input of the data received from the remote controller.
43	POWER ON (L)	I	POWER switch input. When the POWER switch is pressed, this signal goes 'Low'.
44	AUDIO DATA	I	Audio-level serial data input for indication on the audio-level meter.
45	MIC LEV. A/M SW (L)	I	MIC LEV AUTO/MANUAL switch input. When the MIC LEV AUTO/MANUAL switch is pressed, this signal goes 'Low'.
46	TALLY	O	The tally LED indicator turns on when this signal goes 'Low'. In the recording/timer mode, the tally LED indicator blinks at each predetermined cycle. It lights up steadily when the remote control signal is received.
47	POWER LED (L)	O	The POWER LED indicator turns on when this signal goes 'Low'. The POWER LED indicator lights up steadily at power-on, and it blinks on issuance of alarming (low level of battery voltage, moisture condensation, occurrence of fault).
48	WAKE UP (L)	O	Used to start up the MAIN microcomputer (IC1601) and reset the SERVO microcomputer (IC104).
49	C-OUT	O	Timer clock frequency-divided output.
50	KEY IN 0	I	Key matrix input.
51	KEY IN 1		
52	EJECT SW (L)	I	EJECT switch input. When the EJECT switch is pressed, this signal goes 'Low'.
53	STOP SW (L)	I	STOP switch input. When the STOP switch is pressed, this signal goes 'Low'.
54	VDD	I	EVER 5V or LITHIUM 3V power input.
55	XT1	I	Sub-clock oscillation for timer.
56	XT2	O	Connected with the 32.76 KHz crystal oscillator.
57	NC	-	Open.
58	X1	I	Main clock oscillation.
59	X2	O	Connected with the 4.19 MHz crystal oscillator.
60	TITLE/DATE SW (L)	I	TITLE/DATE switch input. When the TITLE/DATE switch is pressed, this signal goes 'Low'.
61	SHIFT SW (L)	I	SHIFT switch input. When the SHIFT switch is pressed, this signal goes 'Low'.
62	+ SW (L)	I	+' switch input. When the '+' switch is pressed, this signal goes 'Low'.
63	- SW (L)	I	'-' switch input. When the '-' switch is pressed, this signal goes 'Low'.
64	COUNTER/TC SW (L)	I	COUNTER/TC switch input. When the COUNTER/TC switch is pressed, this signal goes 'Low'.
65	SP/LP SW (L)	I	SP/LP switch input. (PAL) When the SP/LP switch is pressed, this signal goes 'Low'.

Table I-4 (3/3)

Pin No.	Signal designation	I/O	Function
66	LINE IN/OUT SW (L)	I	LINE IN/OUT switch input. When the LINE IN/OUT switch is pressed, this signal goes 'Low'.
67	TRIG. SW (L)	I	TRIGGER switch input. When the TRIGGER switch is pressed, this signal goes 'Low'.
68	RESET (L)	I	Microcomputer reset input. The microcomputer is reset when this signal goes 'Low'.
69	S0	O	LCD segment output.
70	S1		
80	S11		

3-1-4 Pin functions of MAIN microcomputer (IC601)

Table I-5 (1/3)

Pin No.	Signal designation	I/O	Function
1	LINE (H) /CAMERA (L)	O	Switches camera/line of video circuit.
2	CAMERA (H) /LINE (L)	O	Switches camera/line of video circuit.
3	COMB FILTER ON (H)	O	Turns ON/OFF power supply of Y/C separation circuit.
4	COMP. IN (L)	O	Controls video circuit. Goes 'Low' when composite video signal is input from video pin jack.
5	SP (H) /LP (L)	O	Unused.
6	Hi8 (H) /NORMAL (L)	O	Switches high band/normal of video circuit.
7	PB (H) /EE (L)	O	Switches PB/EE of video/audio circuit.
8	JOG (H)	O	Switches normal/special playback (JOG) of video circuit.
9	V-MUTE (H)	O	Video mute signal. 'High' for muting.
10	A-MUTE (H)	O	Audio mute signal. 'High' for muting.
11	Hi8 DET (H)	I	Inputs playback tape detection. 'High' for playback of high band-recorded tape.
12	ACK	I	ACK detection signal input terminal. Goes 'High' while playback chroma signal is absent.
13	VDD	I	Connected to EVER 5V.
14	VDD	I	Connected to EVER 5V.
15	CASSETTE DOWN (L)	I	Cassette compartment down switch input. Goes 'Low' for down action of cassette compartment.
16	MODE 3	I	Mode selector signal input.
17	2	I	3-bit composition. For detection of mechanism position.
18	MODE 1	I	
19	DATA OUT	O	Outputs data for serial data communication with E ² PROM (IC1603).
20	CLOCK	O	Outputs clock for serial data communication with E ² PROM (IC1603).
21	VIDEO CS	O	Chip select for serial data communication to VIDEO IC (IC201). Communication is performed during 'Low' period.
22	E ² PROM-CS	O	Chip select for serial data communication to E ² PROM (IC1603).
23	DATA IN	I	Inputs data for serial data communication with E ² PROM (IC1603).
24	CGO-STROBE	O	Outputs 'High' at end of transmitting data read-in instruction signal data to CGO (IC213).
25	NC	-	Open.
26			
27	TAPE SENS. LED	O	Pulse for driving LED used to detect leading and trailing ends of tape.
28	CAMERA ON (L)	O	Controls DC/DC converter of camera section. 'Low' for turning on power supply of camera section.
29	AV ON (L)	O	Controls power supply of audio and video systems. 'Low' for turning on power supply of A/V systems.
30	SS ON (L)	O	Controls power supply of SYSCON-SERVO block. 'Low' for turning on power supply of SS block.
31	-	I	Connected to GND.
32	RESET (L)	I	Microcomputer reset input. Resets microcomputer at 'Low' input.
33	Vss	-	Connected to GND.
34	XTAL	-	Crystal connection terminal.
35	EXTAL	I	Connects 8 MHz X'TAL.
36	-	I	Connects EVER 5V.
37	S-DATA IN	I	Inputs data for serial data communication with KEY microcomputer (IC001), SERVO microcomputer (IC104) and CAMERA microcomputer (IC2205).

Table I-5 (2/3)

Pin No.	Signal designation	I/O	Function
38	S-DATA OUT	O	Outputs data for serial data communication with KEY microcomputer (IC001), SERVO microcomputer (IC104) and CAMERA microcomputer (IC2205).
39	S-CLOCK	I	Inputs clock for serial data communication with KEY microcomputer (IC001), SERVO microcomputer (IC104) and CAMERA microcomputer (IC2205).
40	WAKE UP (L)	I	Microcomputer drive signal input. Starts microcomputer on input of 'Low' pulse.
41	-	I	Connected to EVER 5V.
42	CG0/VIDEO-DATA	O	Outputs data for serial data communication to CG0 (IC215) and VIDEO IC (IC201).
43	CG0/VIDEO-CLOCK	O	Outputs clock for serial data communication to CG0 (IC213) and VIDEO IC (IC201).
44	SV SYNC	I	Inputs vertical sync signal for servo. Reference signal for V synchronization with SERVO microcomputer (IC104).
45	REEL FG	I	Inputs winding-side (S or T) reel FG.
46	EOT SENS. (L)	I	Inputs tape leading end detection sensor. 'Low' in synchronization with LED lighting at detection of the end of videotape.
47	BOT SENS. (L)	I	Inputs tape trailing end detection sensor. 'Low' in synchronization with LED lighting at detection of the beginning of videotape.
48	-	I	Connected to GND.
49	-	I	Connected to GND.
50	DEW SENSOR	I	Dew sensor input terminal. When dew point is reached, the resistance of dew sensor increases, so input voltage rises. Analog voltage input.
51	BATT.	I	Discharge voltage detection terminal.
52	AVss	-	Connected to GND.
53	AVref	-	Connected to EVER 5V.
54	AVdd	-	Connected to EVER 5V.
55	TITLE SW (L)	I	Inputs title switch. Goes 'Low' when pressing the switch.
56	DATE SW (L)	I	Date switch input. Goes 'Low' when pressing the switch.
57	D.E. OFF SW (L)	I	Digital effect OFF switch input. Goes 'Low' when pressing the switch.
58	D.E. ON SW (L)	I	Digital effect ON switch input. Goes 'Low' when pressing the switch.
59	D.E. SELECT SW (L)	I	Digital effect selector switch input. Goes 'Low' when pressing the switch.
60	INDEX MARK SW (L)	I	Goes 'Low' when pressing the switch.
61	S CONNECTED (L)	I	S cable connection judgment input. At 'Low' when S cable is connected to S terminal.
62	EDIT SW ON (L)	I	Edit switch input. 'Low' when the switch is at ON.
63 65	NC	O	Open.
66	CAMERA-CS	O	Chip select for serial data communication with CAMERA microcomputer (IC2205). Communication is performed during 'High' period.

Table I-5 (3/3)

Pin No.	Signal designation	I/O	Function												
67	SERVO-CS	O	Chip select for serial data communication with SERVO microcomputer (IC104). Communication is performed during 'Low' period.												
68	KEY-CS	O	Chip select for serial data communication with KEY microcomputer (IC001). Communication is performed during 'High' period.												
69	TEST 1	I	Terminals for function check at factory.												
70	TEST 2														
71	-	-	Connected to EVER 5V.												
72	Vdd	I	Connected to EVER 5V.												
73	Vss	-	Connected to GND.												
74	NC	-	Open.												
75	UNLOAD (H)	O	Controls loading motor. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td>LOAD</td> <td>UNLOAD</td> <td>BRAKE</td> </tr> <tr> <td>UNLOAD H</td> <td>L</td> <td>H</td> <td>H</td> </tr> <tr> <td>LOAD H</td> <td>H</td> <td>L</td> <td>H</td> </tr> </table>		LOAD	UNLOAD	BRAKE	UNLOAD H	L	H	H	LOAD H	H	L	H
	LOAD	UNLOAD	BRAKE												
UNLOAD H	L	H	H												
LOAD H	H	L	H												
76	LOAD (H)														
77	DRUM FORWARD (L)	O	Switches forward/reverse rotation of drum motor. 'Low' for forward rotation.												
78	STEREO (H)/MONO (L)	O	Controls audio circuit. 'Low' for line REC mono.												
79	REC LEV. AUTO (H)	O	Controls audio circuit. Goes 'High' when input level is auto and 'Low' when manual.												
80	DISPLAY (L)	O	'Low' for displaying CG0-A (EVF display) on monitor.												

3-1-5 Pin functions of SERVO microcomputer (IC104)

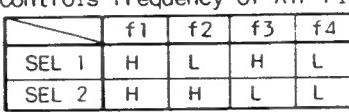
Table I-6 (1/3)

Pin No.	Signal designation	I/O	Function
1	CAPSTAN FWD (H)	0	Controls rotational direction of capstan. 'High' for forward rotation and 'Low' for reverse rotation.
2	CAPSTAN TORQUE (H)	0	Controls capstan torque UP. 'High' for torque UP.
3	NC	0	Open.
4	JOG VD	0	Pseudo VD output at special playback.
5	DSP SELECT (H)	0	Selects DSP signal for video circuit. 'Low' for DSP.
6	CAMERA (L)	0	Selects camera signal for video circuit. 'Low' for camera and 'High' for LINE IN, PB.
7	NC	0	Open.
8	DRUM BRAKE (H)	0	Controls drum brake. 'High' for brake.
9	NC	0	Open.
10	DRUM ON (H)	0	Controls drum ON/OFF. 'High' for drum ON.
11	SV SYNC	0	Vertical sync signal output for servo. Reference signal for V synchronization with MAIN microcomputer (IC1601).
12	NC	0	Open.
14			
15	RESET (L) (RCTC)	0	Resets RCTC control (IC1703). 'Low' for resetting.
16	ATF ADJ. (H)	0	Terminal for ATF automatic adjustment. Outputs 'High' pulse for offsetting external ATF circuit when microcomputer automatically performs ATF adjustment.
17	SLOW TIMING	0	Outputs timing pulse for slow shutter operation.
18	REEL FG	0	Outputs winding-side (S or T) reel FG.
19	DSP-CS	0	Chip select for serial data communication to DSP gate array (IC1506). Communication is performed during 'Low' period.
20	ATF LOCK (L)	I	Goes 'Low' when ATF phase servo is normally phase-locked at playback.
21	FRAME REF.	I	Frame reference signal from DSP gate array (IC1506). ID signal for fetching in 313H into field memory.
22	DSP BUSY (H)	I	BUSY signal from DSP gate array (IC1506). Inputs 'High' at mode transition to DSP. In the 'High' period, mode transition instruction, etc. to DSP will not be issued.
23	RCH OUT 3		
26	RCH OUT 0	0	Audio R-ch level parallel output (4 bits).
27	LCH OUT 3		
30	LCH OUT 0	0	Audio L-ch level parallel output (4 bits).
31	NC	0	Open.
37			
38	DSP ON (L)	0	Controls DSP 5V. 'Low' for turning on DSP 5V.
39	Vss	-	Connected to GND.
40	RESET (L)	I	Microcomputer reset input terminal. Reset at 'Low' input.

Table I-6 (2/3)

Pin No.	Signal designation	I/O	Function
41	Vss	-	Connected to GND.
42	X OUT	O	Crystal connection terminal.
43	X IN	I	Connects 12 MHz X'TAL.
44	SERVO-CS	I	Chip select for serial data communication with MAIN microcomputer (IC1601). Communication is performed during 'Low' period.
45	S-DATA IN	I	Inputs data for serial data communication with MAIN microcomputer (IC1601), DSP gate array (IC1506) and RCTC control (IC1703).
46	S-DATA OUT	O	Outputs data for serial data communication with MAIN microcomputer (IC1601), DSP gate array (IC1506) and RCTC control (IC1703).
47	S-CLOCK	O	Outputs clock for serial data communication with MAIN microcomputer (IC1601), DSP gate array (IC1506) and RCTC control (IC1703).
48	RCTC-CS	O	Chip select for serial data communication with RCTC control (IC1703). Communication is performed during 'Low' period.
49 51	NC	O	Open.
52	Vss	-	Connected to GND.
53	Vdd	I	Connected to SS 5V.
54			
55	Vss	-	Connected to GND.
56	NC	I	Open.
57	T-REEL FG	I	Take up reel FG input terminal.
58	S-REEL FG	I	Supply reel FG input terminal.
59	LCH LEVEL	I	Audio L-ch input terminal.
60	RCH LEVEL	I	Audio R-ch input terminal.
61	Vss	-	Connected to GND.
62	ATF ERROR	I	ATF error input terminal.
63	RF DET. 1	I	PB-RF detection signal input terminal. 'High' at detection.
64	SP/LP DET.	I	SP/LP detection signal input terminal at search. LP at 'High' and SP at 'Low'.
65	RF DET. 2	I	PB-RF detection signal input terminal. 'Low' at detection. (For factory adjustment)
66	COMP. SYNC	I	Composite sync input terminal.
67	DSP V-REF	I	V sync signal from DSP gate array (IC1506). Used as reference signal for drum phase servo at playback.
68	D-PG	I	Drum PG input terminal.
69	D-FG	I	Drum FG input terminal.
70	C-FG	I	Capstan FG input terminal.
71 74	OPEN	O	Open.
75	D-PWM	O	Drives drum motor.
76	C-PWM	O	Drives capstan motor.
77 78	C-FG	I	Capstan FG input terminal.
79	LANC IN	I	Inputs data for LANC communication.
80	LANC OUT	O	Outputs data for LANC communication.
81 85	NC	O	Open.

Table I-6 (3/3)

Pin No.	Signal designation	I/O	Function														
86	Vss	-	Connected to GND.														
87	SHIFT \oplus /LOAD \ominus	I	Controls parallel to serial conversion of audio data. * Refer to pin 19 of KEY microcomputer (IC001).														
88	Vss	-	Connected to GND.														
89	Vdd	I	SS 5V.														
90																	
91	REC \oplus	O	Controls REC amplifier. 'High' for REC.														
92	FE ON \oplus	O	Controls oscillation of FE head. 'High' for erasure.														
93	NC	O	Open.														
94	TS B	O	ATF lock sample/hold pulse. 'High' for sampling and 'Low' for holding.														
95	ATF SW	O	Switches ATF BPF. 'Low' at playback in f1 and f2 tracks. 'High' at playback in f3 and f4 tracks.														
96	SEL 2	O	Controls frequency of ATF PILOT signal. 														
97	SEL 1		<table border="1"><tr><td></td><td>f1</td><td>f2</td><td>f3</td><td>f4</td></tr><tr><td>SEL 1</td><td>H</td><td>L</td><td>H</td><td>L</td></tr><tr><td>SEL 2</td><td>H</td><td>H</td><td>L</td><td>L</td></tr></table>		f1	f2	f3	f4	SEL 1	H	L	H	L	SEL 2	H	H	L
	f1	f2	f3	f4													
SEL 1	H	L	H	L													
SEL 2	H	H	L	L													
98	HEAD SW PULSE	O	Outputs head switching pulse.														
99	HEAD SW PULSE (RCTC)																
100	CAPSTAN ON \oplus	O	Turns ON/OFF capstan.														

3-1-6 Pin functions of RCTC control (IC1703)

Table I-7

Pin No.	Signal designation	I/O	Function
1	-	I	Unused. Connected to SS 5V.
2	NC	O	Open.
3	REC AREA	O	Outputs recording area for RCTC signal. (For switch inside IC1701)
4	PB (H)	O	Switches REC/PB for REC/PB-RF IC (IC1701).
5	FM-DATA	I/O	RCTC FM-DATA signal input/output terminal.
6	Vss	-	Connected to GND.
7	CLOCK	I	Terminal for inputting CLOCK signal in PLL with PB RCTC-RF signal.
8	S/P	I	Serial/parallel communication switching terminal. 'High': Serial, 'Low': Parallel. (Connected to SS 5V.)
9	NC	O	Open.
10			
11	TEST 1	I	Test terminals. Fixed to 'Low'.
12	TEST 2		
13	-	I	Unused. Connected to GND.
14	NC	O	NC
15	RCTC AREA	O	Outputs RCTC recording area. (For switch inside head amplifier)
16	AFTER REC (H)	O	Turns ON the REC and PB amplifiers simultaneously at after-recording.
17	REC BIAS CONT.	O	Controls DC bias of REC amplifier.
18	Vss	-	Connected to GND.
19	Vdd	I	Connected to SS 5V.
20			
21	NC	O	Open.
22			
23			
24	HEAD SW PULSE	I	Inputs head switching pulse.
25	-	I	Unused. Connected to GND.
26	-	I	Unused. Connected to GND.
27	HD (EVF)	I	Inputs sync signal.
28	RCTC-HD	O	Outputs pseudo horizontal sync signal in RCTC section at after-recording.
29	MASK	O	Masks video area in RCTC section at after-recording.
30	X OUT	O	Crystal connection terminal.
31	Vss	-	Connected to GND.
32	X IN	I	Crystal connection terminal.
33	NTSC (H) /PAL (L)	I	NTSC/PAL switching terminal.
34			
35	NC	-	Open.
36			
37	-	I	Unused. Connected to GND.
38	-	I	Unused. Connected to GND.
39	-	I	Unused. Connected to GND.
40	-	I	Unused. Connected to SS 5V.
41	RESET (L)	I	System reset input terminal.
42	Vss	-	Connected to GND.
43	Vdd	I	Connected to SS 5V.
44	S-DATA OUT	O	Outputs data for serial communication with SERVO microcomputer (IC104).
45	S-CLOCK	I	Inputs clock for serial communication with SERVO microcomputer (IC104).
46	S-DATA IN	I	Inputs data for serial communication with SERVO microcomputer (IC104).
47	RCTC-CS	I	Chip select for serial communication with SERVO microcomputer (IC104).
48	-	I	Unused. Connected to GND.

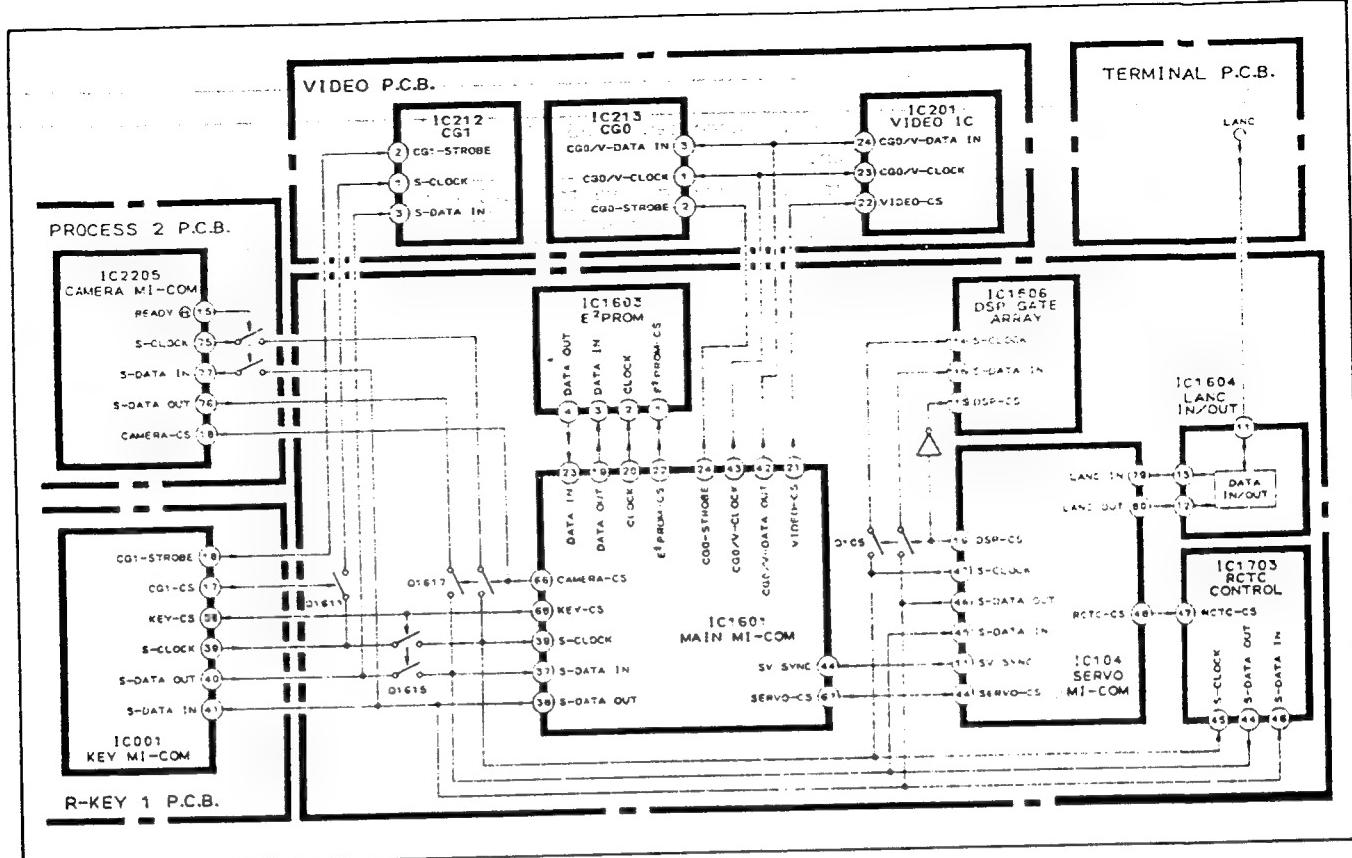


Fig. I-16

In this camcorder, the following two serial data communications are carried out:

- 1) Bidirectional communication between the main microcomputer and the CAMERA/KEY/SERVO microcomputer.
- 2) Unidirectional communication from the KEY microcomputer to the CGI IC, from the MAIN microcomputer to the CG0 IC/VIDEO IC, and from the SERVO microcomputer to the DSP gate array.

* Bidirectional communication between the MAIN microcomputer and the CAMERA/KEY/SERVO microcomputer

Communication control is totally conducted by the CS (CHIP SELECT) signal issued from the MAIN microcomputer. The amount of data interchanged in communication is as follows:

Between MAIN and CAMERA microcomputers 8 bits x 4

Between MAIN and KEY microcomputers 8 bits x 8

Between MAIN and SERVO microcomputers 8 bits x 8

The key input signal, camcorder mode signal, mechanism check switch signal, and other data signals are interchanged in communication.

When communication with the KEY microcomputer is required, the MAIN microcomputer sets the KEY-CS signal at pin 68 (IC1601) to 'High' level for indicating a communication request to the KEY microcomputer. It also establishes a communication link by turning on Q1615. Then, the KEY microcomputer sends the S-CLOCK signal (from pin 39) and the S-DATA signal (from pin 40) to the MAIN microcomputer. When the MAIN microcomputer receives the S-DATA signal (at pin 37), it initiates bidirectional serial data communication.

In the same fashion, the MAIN microcomputer outputs the CAMERA-CS signal (from pin 66) and the SERVO-CS signal (from pin 61) to the CAMERA and SERVO microcomputers respectively to initiate serial data communication.

Receiving the SVSYNC signal from pin 11 of the SERVO microcomputer, the MAIN microcomputer provides vertical synchronization and controls chip selection so that communication with the microcomputer is carried out once per vertical interval while preventing an overlap of vertical intervals. The S-DATA OUT signal appearing at pin 38 of the MAIN microcomputer contains data to be sent to each of other microcomputers, but only while the CS signal is output, each of them recognizes that the data is valid.

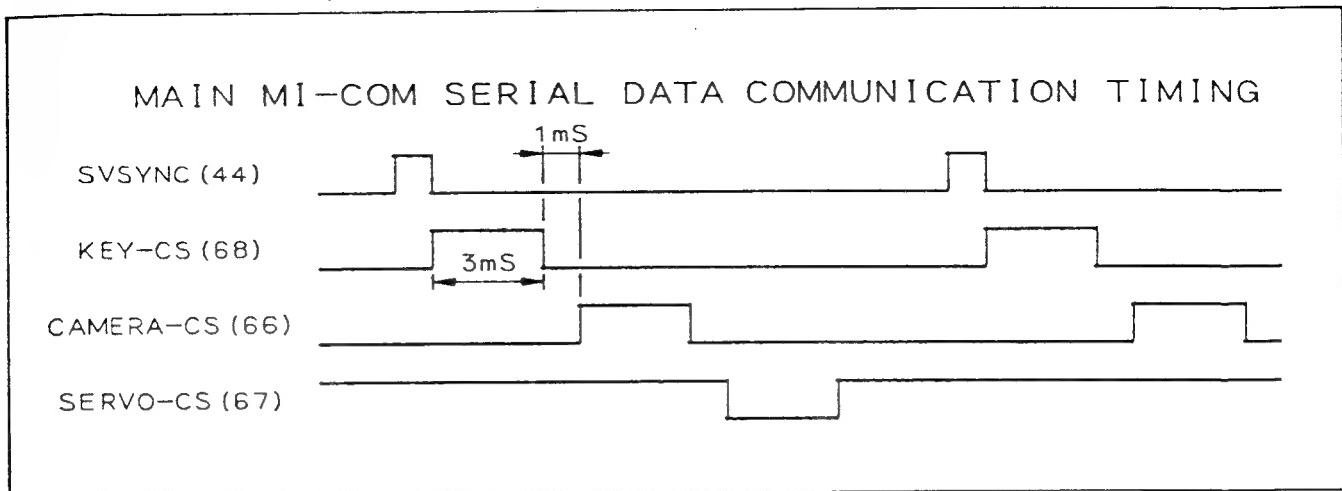


Fig. I-17

- Unidirectional communication from the KEY microcomputer to the CG1

The title/date display character data is transferred from the KEY microcomputer to the CG1. More specifically, the character data is input from pin 40 of the KEY microcomputer to the CG1 on an 8-bit basis serially. The S-CLOCK signal, used for read-in clocking, is passed through Q1611 and applied to the CG1 only while the CG1-CS signal (from pin 17) is 'High'. Upon receiving the CG1-STROBE signal after input of the 8-bit serial data, the CG1 recognizes that the relevant data is valid for reading.

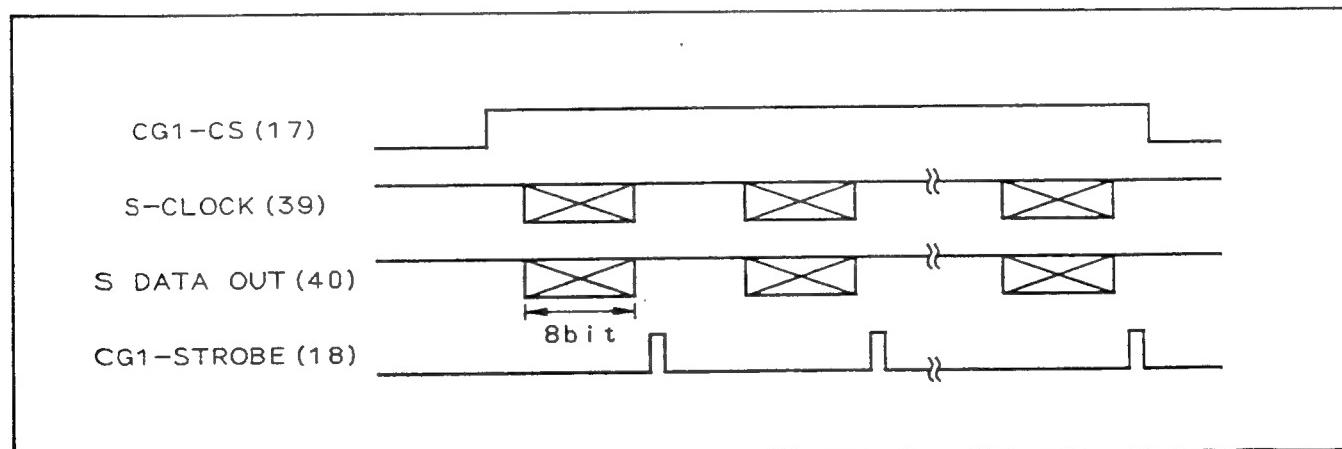


Fig. I-18

- Unidirectional communication from the MAIN microcomputer to the CG0/
Unidirectional communication from the MAIN microcomputer to the VIDEO IC

The MAIN microcomputer transfers the viewfinder display character data to the CG0, and it also transfers the mode changeover data (Hi8, NORM, PB, REC, etc.) and character setup data to the VIDEO IC. More specifically, the data is input from pin 42 of the MAIN microcomputer to each of these two ICs. The validity of data is indicated using the CG0-STROBE signal (from pin 24) and the VIDEO-CS signal (from pin 21). That is, in data transfer to the CG0, the CG0-STROBE signal is given to the CG0 after input of the 8-bit serial data (in the same manner as for communication from the KEY microcomputer to the CG1). Thus, the CG0 recognizes that the relevant data is valid for reading. In data transfer to the VIDEO IC, while the VIDEO-CS signal remains 'Low', the VIDEO IC recognizes that 19 bits of 24-bit data are valid for reading.

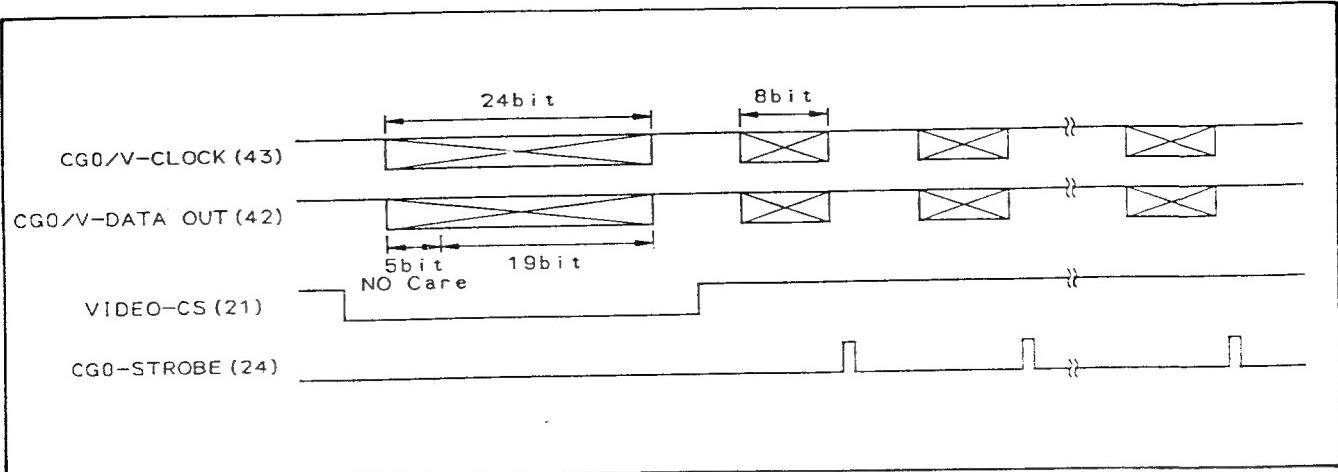


Fig. I-19

° Unidirectional communication from the SERVO microcomputer to the DSP gate array

The DSP gate array (IC1506), which serves as a kernel circuit for digital signal processing, is controlled under direction of the SERVO microcomputer. That is, the control data for each DSP operation mode is transferred from the SERVO microcomputer to the DSP gate array. While the DSP-CS signal (from pin 19) is 'Low', 24 bits (8 bits x 3) of control data are read in with timing of the DSP-CLOCK signal (from pin 43).

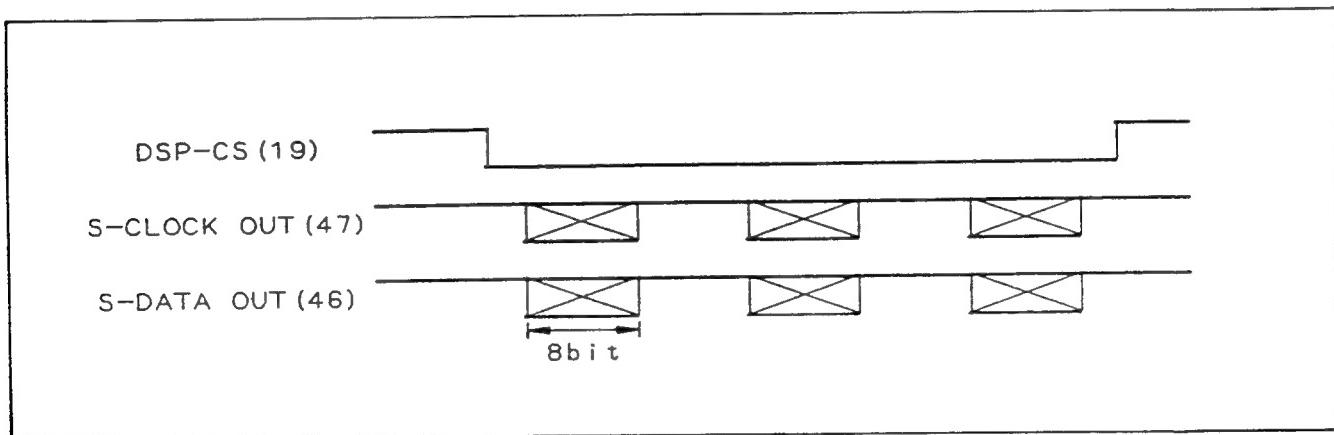


Fig. I-20

° Bidirectional communication between the SERVO microcomputer and RCTC control

RCTC control IC is controlled by the SERVO microcomputer. The SERVO microcomputer transfers the mode chargeover data to the RCTC control, and the RCTC control sends back mode and RCTC data to the SERVO microcomputer when the SERVO microcomputer sets the RCTC-CS signal at pin 48 to 'Low' level. (Data: 8 bits x 6)

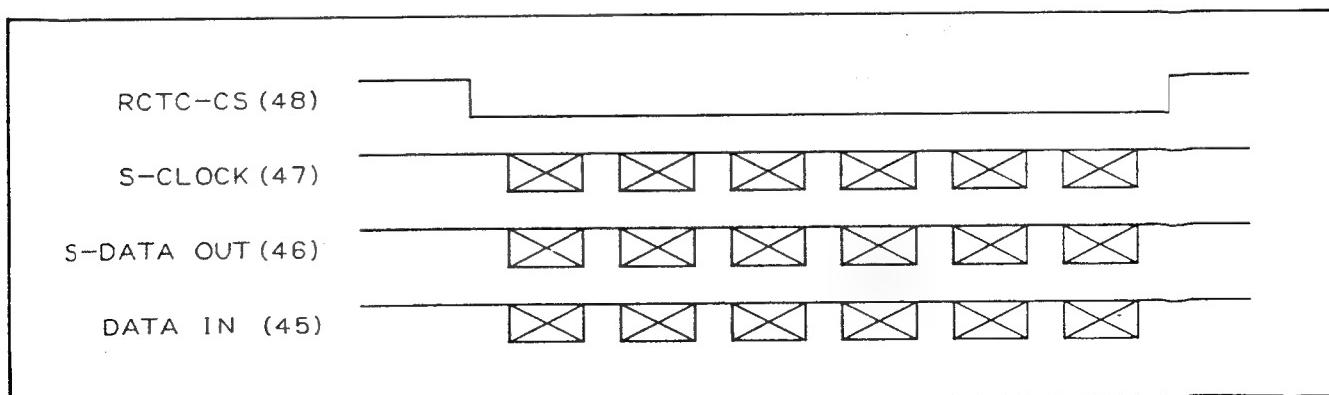


Fig. I-21

- Bidirectional communication between the SERVO microcomputer and LANC IN/OUT IC

LANC IN/OUT IC is just a connector between the SERVO microcomputer and an editor. This communication is the same format as LANC.

3-1-8 Safety functions

To prevent a physical damage or jamming of tape due to improper setting, this camcorder carries out the warning indication processing, key-input rejection, or operational restriction as mentioned below.

(1) Detection of decrease in battery voltage

The separate detection circuits are provided for checking the low levels of main and lithium batteries.

" Detection of decrease in main battery voltage

The following three levels of main battery are detectable during operation.

(UNDER CUT 1)

When the voltage level at main battery terminal decreases below 5.65 V, the POWER LED indicator flashes and the 'BATT' warning message blinks on the viewfinder screen. Under this condition, the key input and operation are not restricted (the normal operation can be continued).

Note, however, that only the POWER and EJECT keys are acceptable after the camcorder is stopped once.

If the UNREG 6V power decreases below the predetermined allowable voltage level, the low voltage detecting level at pin 51 of the MAIN microcomputer decreases also and the UNDER CUT 1 state is recognized in the microcomputer. Knowing this state, the MAIN microcomputer informs the KEY microcomputer of it through serial data communication. Then, the MAIN microcomputer indicates the warning on the viewfinder screen with the CG0/V-DATA OUT signal from pin 42, and the KEY microcomputer flashes the POWER LED indicator (from pin 47) and blinks 'BATT' on the LCD.

(UNDER CUT 2)

If the UNREG 6V power further decreases below 5.45 V, the power-off state is taken automatically through the stop state.

In the same manner as for the UNDER CUT 1, the low voltage detecting level at pin 51 of the MAIN microcomputer is detected in the microcomputer. Thus, upon detection of the low voltage level of less than 5.45 V, the microcomputer stops the mechanisms and turns the power off.

(SHUT-OFF)

If the main battery voltage drops rapidly below 4.5 V, the E5 DET. IC (IC1605) makes the E5 DET. SIGNAL (from pin 1) 'Low' to apply the RESET (L) signal to pin 32 of the MAIN microcomputer (IC1601). Thereby, the MAIN microcomputer is reset to shut the power off immediately.

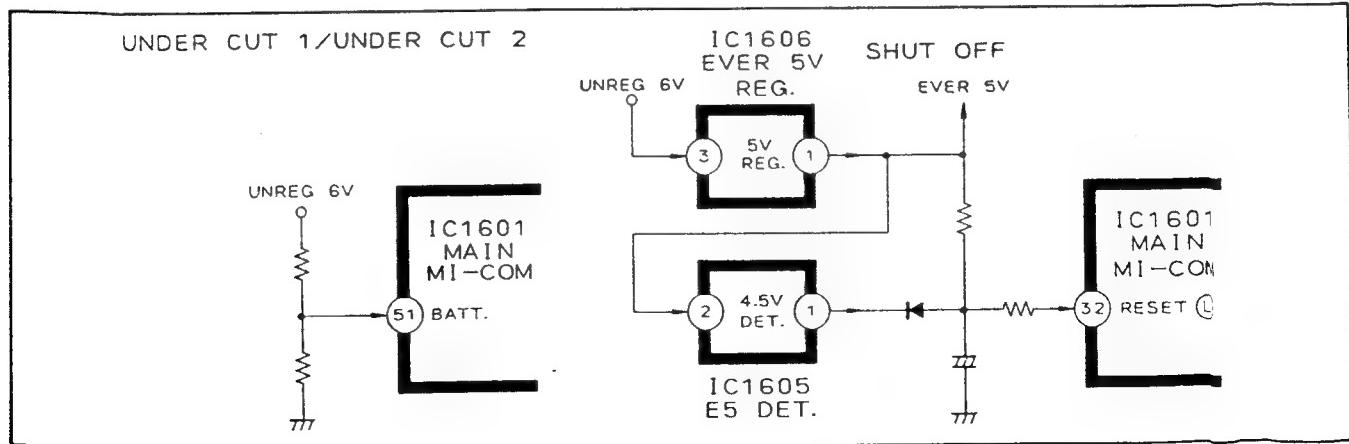


Fig. I-22

* Detection of decrease in lithium battery voltage

If the voltage level at lithium battery terminal decreases below approx. 2.7 V, pin 2 of IC002 goes 'Low' to let the KEY microcomputer know the low voltage level of lithium battery. Knowing this condition, the KEY microcomputer informs the MAIN microcomputer of it through serial data communication. Then, the MAIN microcomputer blinks 'DATE BATT' on the viewfinder screen with the CG0-V-DATA OUT signal from pin 42.

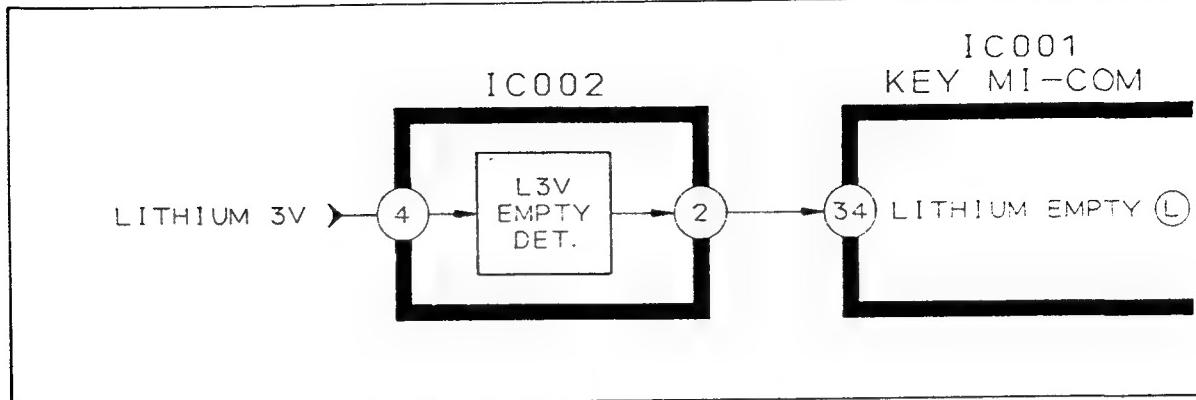


Fig. I-23

(2) Dew condensation

The dew (moisture condensation) detecting function is provided to circumvent jamming of tape due to possible sticking.

If moisture condensation is detected during operation, the mechanism is put in the stop state and the POWER LED indicator flashes for warning. Also, 'd' and 'DEW' blink on the LCD and the viewfinder screen respectively to let the user know detection of moisture condensation. Under this condition, other keys than the POWER and EJECT keys become ineffective. Even if the tape cassette is inserted, its loading sequence is not carried out. After 'dew' condition is removed, the camcorder sets up the stop mode to get ready for normal operation.

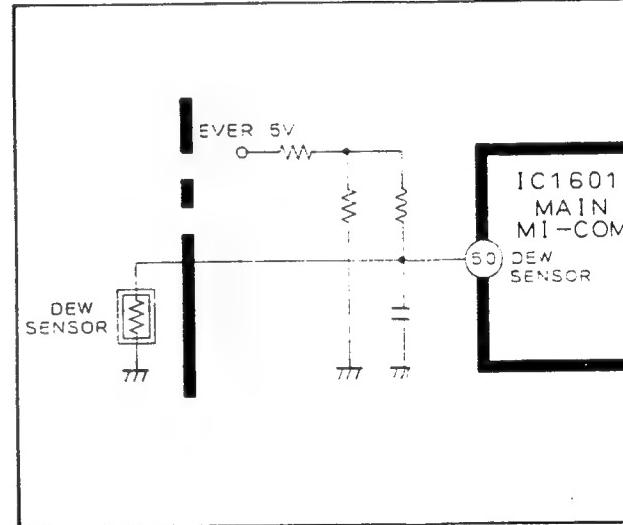


Fig. I-24

When the camcorder is under 'dew' condition, the DEW sensor equipped on the mechanical chassis increases its resistance to increase the DEW detection voltage input to pin 50 of the MAIN microcomputer. If the level of this voltage rises above the predetermined value, the microcomputer judges that dew condensation has occurred. Then, the microcomputer carries out the mode transition and provides the warning indication.

(DEW EJECT)

If the videotape sticks to the drum, it cannot be run only with the takeup reel. In this event, the supply reel must be used also. Upon detection of dew condensation, the 'DEW EJECT' sequence is carried out as indicated below.

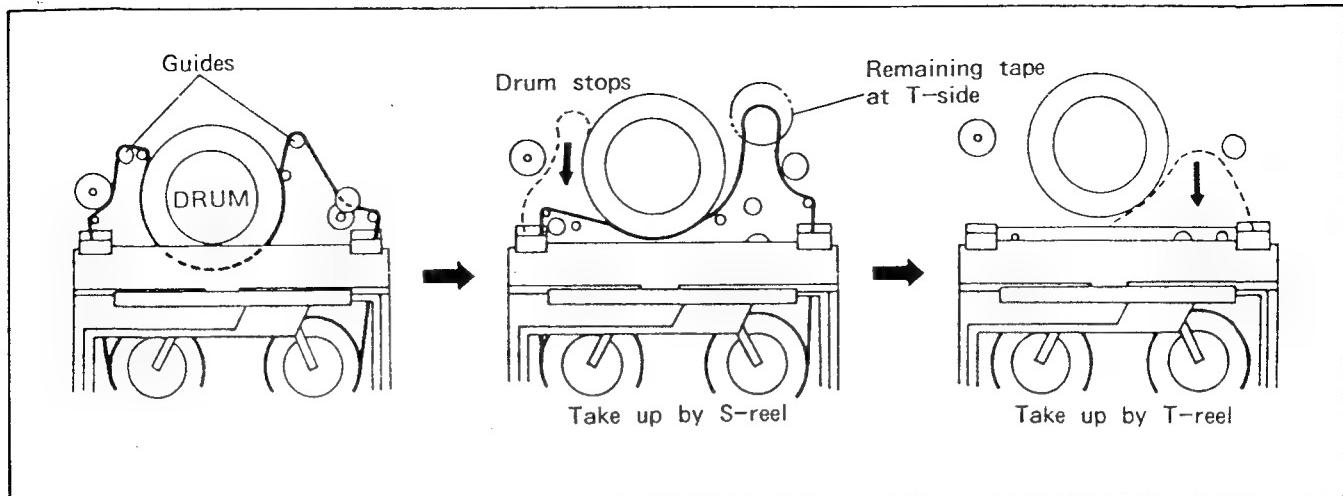


Fig. I-25

(3) End-of-tape check

If the videotape is run up to its end, the tape guide may be damaged or the head drum may be squeezed with the tape. To prevent such an event, the end-of-tape check is conducted to detect the end of tape during operation. Upon detection of the end of tape, the tape is stopped immediately.

The end-of-tape detecting LED is turned on/off with the TAPE SENS LED signal appearing at pin 27 of the main microcomputer.

It constantly flashes for one msec per 17 msec. If the signal across pins 46 and 47 goes 'Low' twice in succession, the microcomputer recognizes the end of tape and applies reverse-rotation braking to the capstan motor to stop the mechanism.

Also, if the EOT and BOT input signals go 'Low' twice in succession, the microcomputer judges that the cassette is not loaded. In this case, 'CASSETTE' blinks on the viewfinder screen.

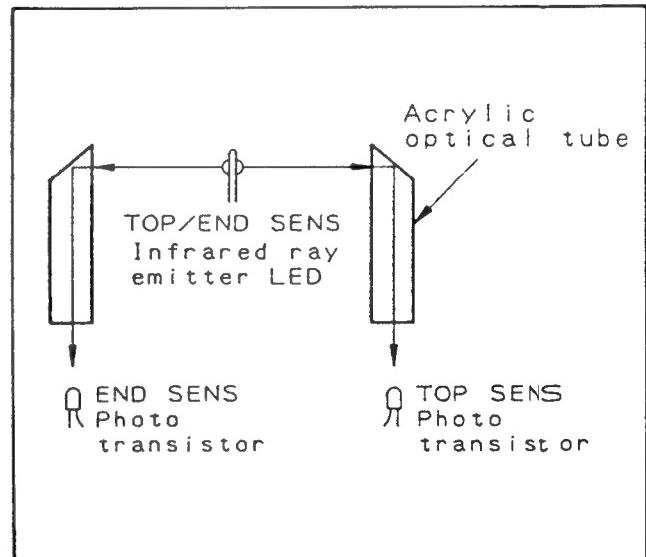


Fig. I-26

(4) Pause timer

In the REC PAUSE or STILL mode, the head drum rotates with the tape wound around it. If this condition persists for a certain period of time, the tape may wear or the head may be contaminated with magnetic oxides. To prevent this, if the REC PAUSE state is kept for seven minutes, it is automatically changed over to the STOP mode and the power is turned off. Also, if the STILL mode is kept for seven minutes, it is automatically changed over to the STOP mode with the power being turned on.

(5) Trouble stop (error)

The error detection sequence is carried out by the MAIN microcomputer (IC1601) and the SERVO microcomputer (IC104). Upon detection of an error, the mechanism is forced to stop. In this state, only the POWER and EJECT keys are acceptable. Note, however, that these keys may also be ineffective on occurrence of a certain kind of error.

In the event of trouble, the POWER LED indicator flashes, 'EJECT' blinks on the viewfinder screen and also 'EJECT' blinks on the LCD for warning.

Table I-8

Event	State		Detection
Drum error	1. Error detection mode : At startup/during operation 2. Frequency during operation: 600 Hz 3. Error detection level At startup : 240 Hz or less During operation : 200 Hz or less 4. Error detection time At startup : An error is indicated if the detection level does not exceed 100 msec within a period of 5 msec after issuance of the startup instruction. During operation : 100 msec or more		SERVO MI-COM IC104-68 D-FG
Capstan error	1. Error detection mode : Detected only at startup of the capstan in unloading. 2. Error detection level : 40% or less of the rated rotating speed. 3. Error detection time : If 40% or less of the rated rotating speed is exceeded at least once within a period of 2 sec after issuance of the startup instruction.		SERVO MI-COM IC104-70 C-FG
Reel error	1. Error detection mode : Each mode in which the reel is rotated. 2. Error detection level and detection time: Under condition that the rated rotating speed in each mode is 'n' with respect to the maximum diameter of tape winding: PLAY } REC } FF SEARCH } An error is indicated if ' $n \times 1/2$ ' is reached. FR SEARCH } FF/REW } An error is indicated if ' $n \times 1/5$ ' is reached. UNLOAD } An error is indicated if no change found during one sec.		MAIN MI-COM IC1601-45 REEL FG
Loading error	An error is indicated if the mode selection data remains unchanged for the predetermined period of time. Mode transition between EJECT and UNLOAD 2 msec Mode transition between UNLOAD and STOP 8 msec Mode transition between STOP and PINCH ON 2 msec		MAIN MI-COM IC1601-16 ~ 18 MODE 1 ~ 3

(6) Full-top loading

To prevent the beginning of tape from getting onto the drum edge in loading, the following special sequence is performed upon detection of the beginning of tape after the cassette is inserted.

The takeup reel tenses the tape first, and then the drum motor is run in reverse slightly for approx. one second. This causes the claw on the upper drum to push the tape away to the edge of drum. And, reverse-rotation braking is applied to the drum motor to wind the tape on the takeup reel again. Thereafter, the normal loading sequence is carried out.

3-1-9 Servo circuit

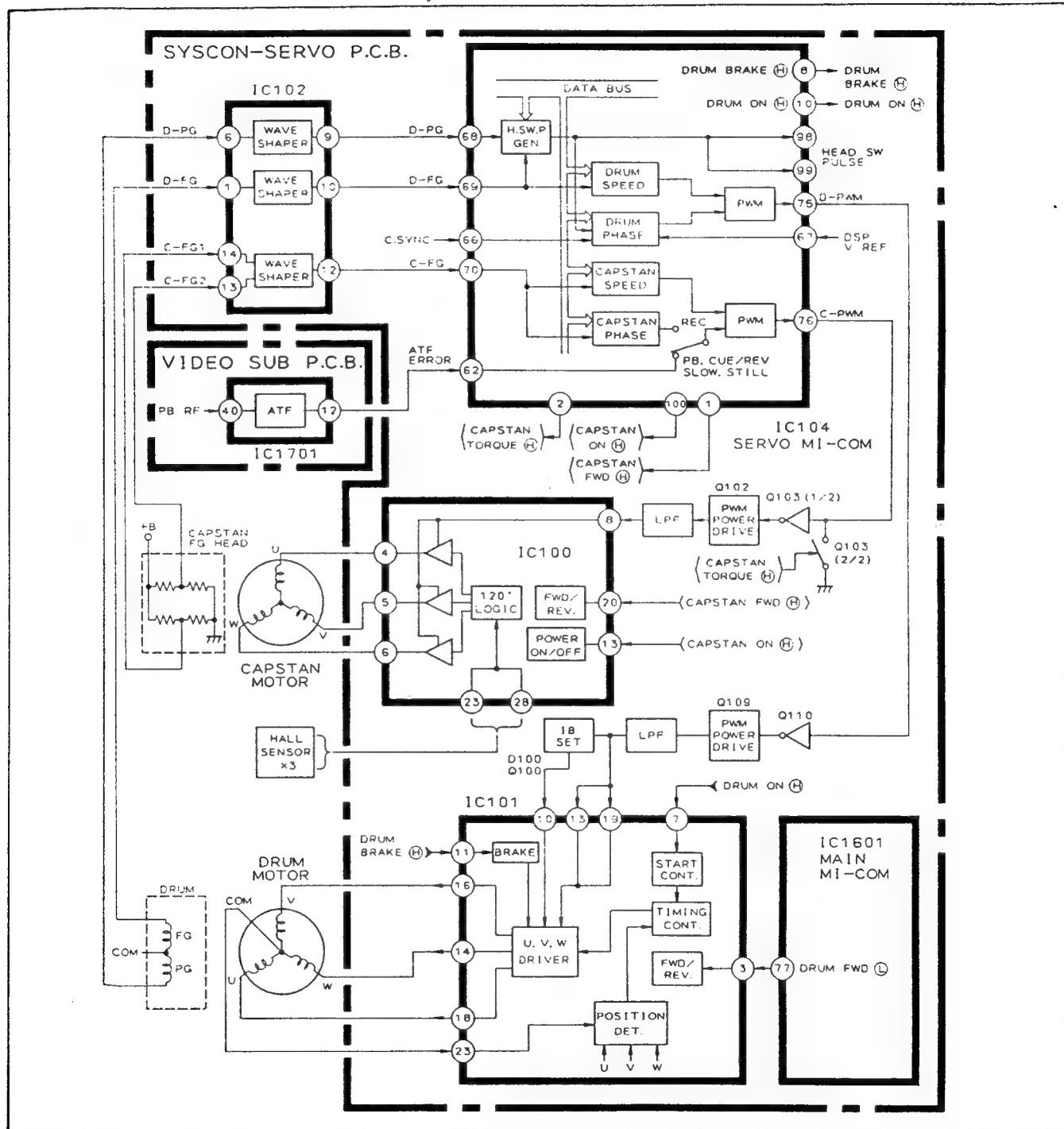


Fig. I-27

The drum and capstan servoloops are controlled principally under direction of the SERVO microcomputer (IC104) mounted on the SS P.C.B.

(1) Drum servocontrol

The minuscule outputs from the FG and PG coils equipped on the drum motor are subjected to waveform shaping in IC102 to provide logical levels (0 to 5 V). Then, the logical-level signals are input to the SERVO microcomputer. Under the normal operation (recording/playback), the D-FG signal as a frequency of 600 Hz. Using these signals, the SERVO microcomputer carries out the speed servocontrol and the phase servocontrol to output the D-PWM signal from pin 75.

The D-PWM output signal is subjected to power driving by Q109 and converted to DC voltage through the low-pass filter. The converted DC voltage is applied to pins 13 and 19 of the drum motor driver (IC101). According to the level of this drive voltage, the voltage applied to the winding of three-phase motor is changed to control the rotating speed of drum. The IB SEL block equipped at the location of pin 10 is used for reducing electromagnetic noise generated by the drum motor, and internal correction is made for variation in the level of drive voltage (at pins 13 and 19).

The switch timing control of the three-phase motor is conducted through detection of a counter e.m.f. voltage produced from each winding. The D-PWM signal mentioned above is used to start up the motor. For forward/reverse rotation control, the DRUM FWD (H) signal output from the main microcomputer is used.

(2) Capstan servocontrol

The FG1 signal from the capstan motor and the FG2 signal having the reverse phase are subjected to waveform shaping by IC102. Then, these signal are frequency-multiplied (doubled) respectively to provide logical-level inputs to the SERVO microcomputer. In recording, the frequency is 1325 Hz. On receipt of these input signals, the SERVO microcomputer carries out speed servocontrol and phase servocontrol. In playback, the ATF ERROR signal input to pin 62 is used to conduct phase servocontrol. As in the drum servocontrol sequence, the C-PWM signal (result of servocontrol) is output from pin 76 and then subjected to power driving with Q102. Then, after passing through the low-pass filter, the DC voltage is input to pin 8 of the capstan motor drive (IC100) and applied for driving in each of motor phases U, V and W.

For the U/V/W switching of motor, the three Hall-effect elements are used to detect the rotor position. Thus, the switching operation is controlled.

Starting of the motor is controlled by the CAPSTAN ON (H) signal from the MAIN microcomputer. Also when reverse-rotation braking is applied on detection of the end of tape, the SERVO microcomputer outputs the CAPSTAN TORQUE (H) signal to turn on Q103 for increasing the drive voltage to its maximum level. In this sequence, the SERVO microcomputer also sets the CAPSTAN FWD (H) to 'Low' level.

3-2 Video circuit

The video circuit of this product is nearly the same as A2Hi, EX1Hi except for the change of the I/O switch IC of input section (LINE INPUT added) and that due to addition of the RCTC function. The changes alone are explained here. For details, refer to the service manual of A2Hi.

(1) Changes in recording system

1) Luminance signal

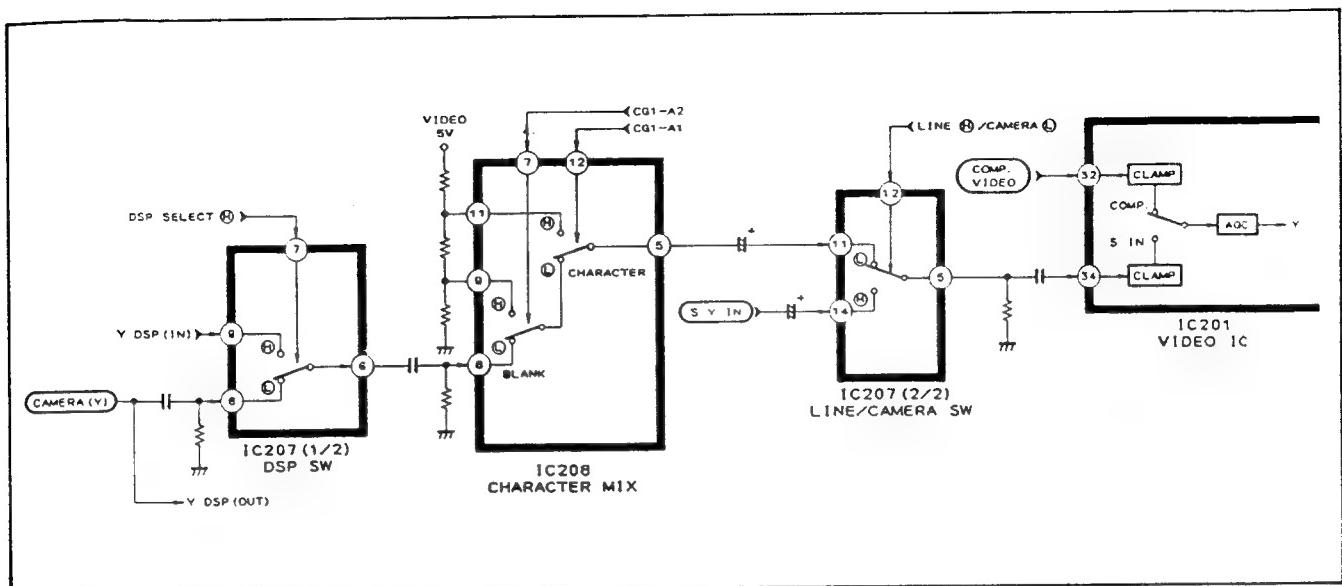


Fig. I-28

The mix circuit of Character Generator on the EX1Hi is composed of transistors, however that on the EX2Hi is composed of ICs. The LINE input is switched over by the LINE (H)/CAMERA (L) signal in the next step and the recording Y signal is output. (The signal flow after this is the same as that for the EX1Hi.)

2) Chrominance signal

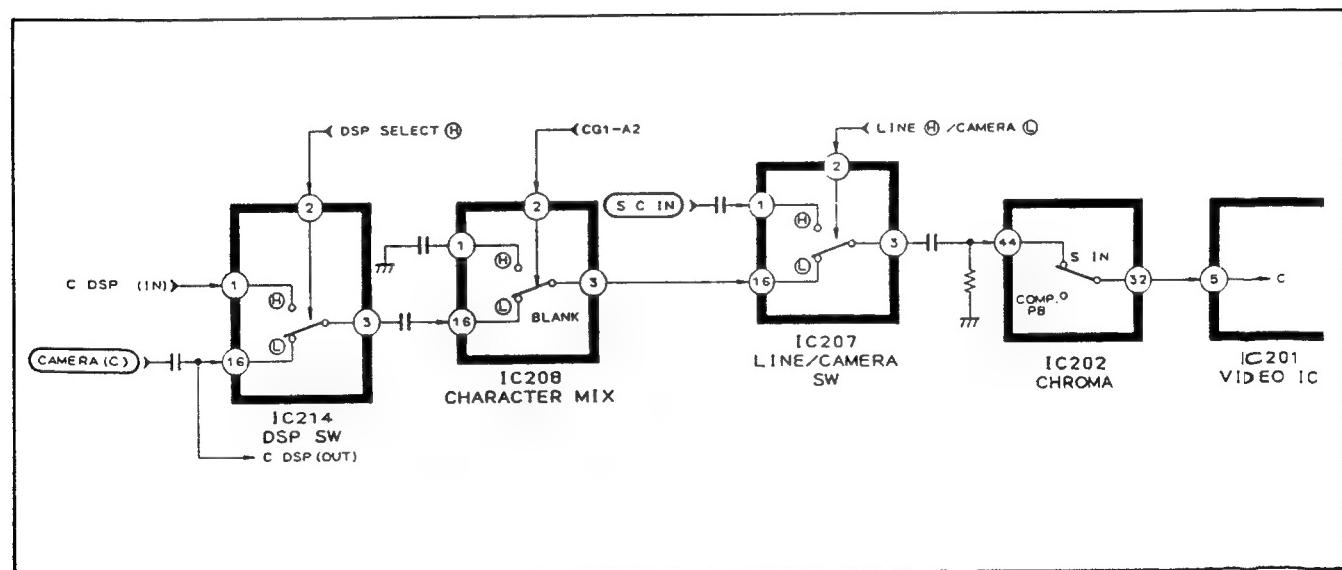


Fig. I-29

The mix circuit of Character Generator was changed from transistors to ICs. The LINE input is switched over in the next step to output the recording C signal. (The signal processing hereafter is the same as that for the EX1Hi.)

(2) Changes in playback system

Except for the changes in the section shared with the recording system, the playback system has a change only in the PBY output section of IC201. Also, this product has an additional switch, which turns ON the power supply to the 1HDL IC for Y/C separation only when inputting the composite signal at recording and PB mode.

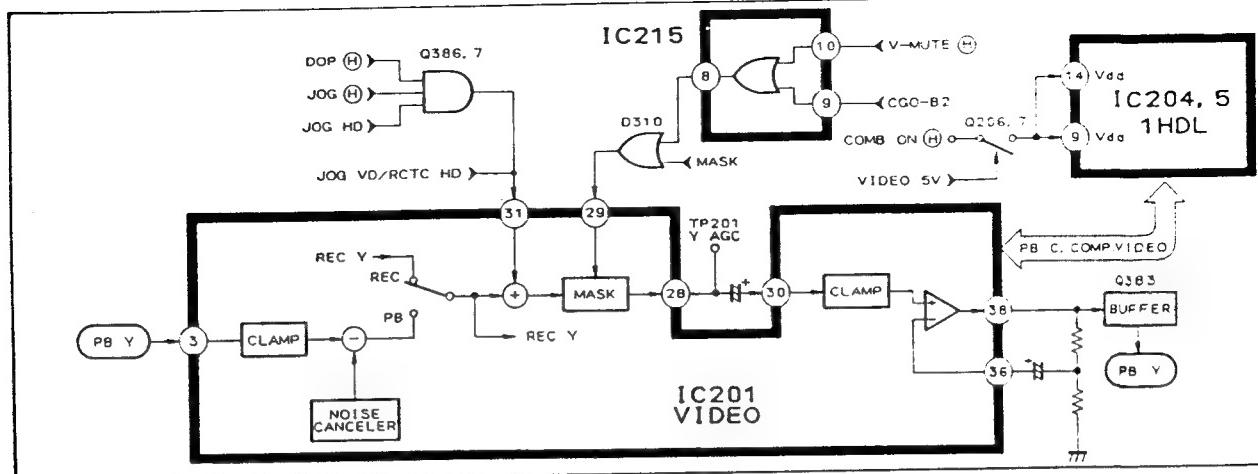


Fig. I-30

The luminance signal after demodulation and PBY level adjustment is input to pin 3 of IC201. The subsequent circuit up to the PB/REC switch via CLAMP and NOISE CANCELER is the same as before. Then, the luminance signal passes through the JOG VD/RCTC HD signal mix circuit. This circuit is provided for adding a vertical sync signal for speed-varied playback, and a horizontal sync signal for RCTC after-recording. The next MASK circuit is used to mask the bottom of screen at RCTC after recording. (The PB C signal circuit uses mute block of IC202 for masking.) After masking, the luminance signal is output from pin 28. Finally, the luminance signal is input from pin 30 and output as 1 Vp-p signal from pin 38 via the operational amplifier.

3-3 RCTC circuit

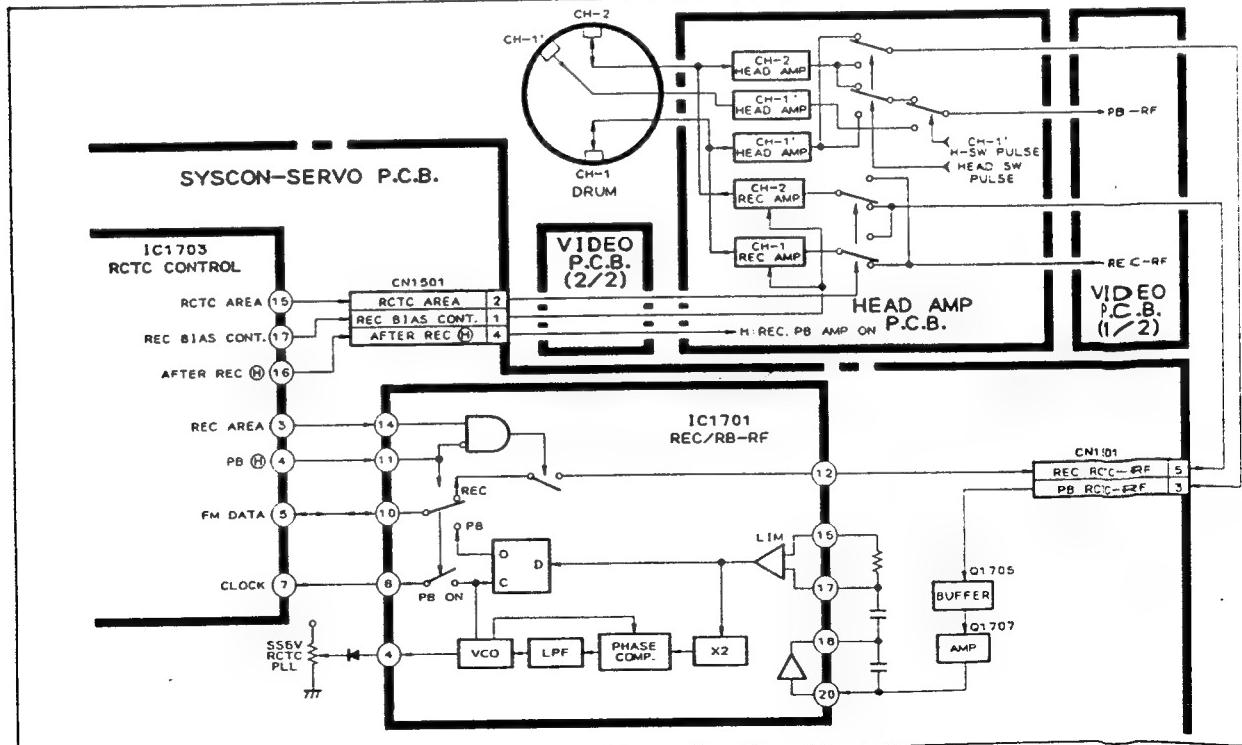


Fig. I-31

(1) Recording system

The recording signal of RCTC is output from pin 5 of IC1703 (RCTC CONTROL). This signal is already frequency-modulated. 'High' and 'Low' areas of the data are modulated into 5.79 and 2.89 MHz, respectively. Then, the signal is input to pin 10 of IC1701 (REC/PB-RF). After passing through the REC/PB switch and the recording area switch, the signal is output from pin 12. Subsequently, the signal is input to the head amplifier through the VIDEO P.C.B. According to RCTC AREA signal, the recording signal is sent to the head opposite to the one which receives video signal, and it is recorded on tape.

(2) Playback system

The signal from the video head is amplified in the head amplifier P.C.B., and divided into PB-RF for video signal and PB-RF for RCTC according to head switch pulse. After division, the PB RCTC-RF signal is sent to the SS P.C.B. via the video P.C.B. In the SS P.C.B., the PB RCTC-RF signal passes through the amplifier (Q1707, IC1701-18, 20) and limiter (IC1701-15, 17). In the IC1701, this signal is synchronized with the clock in PLL with playback signal. Then, the signal is sent to IC1703 via REC/PB switch and demodulated into RCTC data according to the clock from IC1701.

° PLL

IC1701 compares the phase between a doubled playback signal and internal oscillation of 11.58 MHz to obtain an error voltage, according to which VCO is controlled. The phase-locked signal is sent to IC1703 and used for demodulation of the RCTC data.

CHAPTER II. INFORMATION FOR REPAIR

1.	List of Maintenance Tools and Supplies	
1-1	Maintenance tools	II - 1
1-2	Supplies	II - 1
2.	Preparation for Adjustment (Camera/Recorder)	
2-1	Preparatory procedure for camera adjustment	II - 2
2-1-1	Setting	II - 2
2-1-2	AWB adjustment mode	II - 2
2-1-3	Setting for adjustment of AF threshold level	II - 4
2-1-4	Other precautions	II - 4
2-2	Preparatory procedures for recorder adjustment	II - 5
2-2-1	Basic setting	II - 5
2-2-2	How to open P.C.B.s of recorder section	II - 7
2-2-3	Service modes	II - 7
3.	Adjustment After Replacement	
3-1	Camera section	II - 12
3-2	Recorder section	II - 12
4.	Trouble Shooting Guide	
4-1	Power trouble	II - 14
4-2	Error trouble ("EJECT" flashing)	II - 15
4-3	VIDEO trouble	II - 16
4-4	Diagram of check point	II - 21

CHAPTER II. INFORMATION FOR REPAIR

1. List of Maintenance Tools and Supplies

1-1 Maintenance tools

Table II-1

DESCRIPTION	TOOL NO.	REMARKS
Wireless controller WL-600	DY2-1294-000	
Alignment tape E (MONOSCO)	DY9-1062-000	Refer to page II-7 (to modify for Service Mode setting).
Alignment tape (V sweep master Hi8)	DY9-1111-500	<WR5-7CE>
Alignment tape (Tracking B with marker)	DY9-1086-001	<WR5-1CP> New
Recording current checker	DY9-1056-000	
Y/C mix amplifier II	DY9-1079-001	
Y/C separator	DY9-1093-500	
Character generator	DY9-1115-000	
Extension connector (13 pin)	DY9-1147-000	
Extension connector (11 pin)	DY9-1148-000	
Extension cable (4 pin)	DY9-1152-000	
Extension cable (3 pin)	DY9-1176-000	
Extension cable (7 pin)	DY9-1180-000	
Extension cable (2 pin)	DY9-1181-000	
Extension cable	DY9-1182-000	
Connector ass'y (7 pin)	DY9-1183-000	
Connector ass'y (14 pin)	DY9-1184-000	
Printed cord (11 pin)	DY9-1227-000	
Printed cord (13 pin)	DY9-1228-000	
Printed cord (8 pin)	DY9-1250-000	
Extension cable (7 pin)	DY9-1253-000	
Extension cable (11 pin)	DY9-1255-000	
Printed cord (24 pin)	DY9-1270-000	
Extension cable (12 pin)	DY9-1290-000	
Color bar chart	DY9-2002-000	
Gray scale chart	DY9-2005-000	
CCB4 filter	DY9-2032-000	
Color chart viewer (5600°K)	DY9-2039-220	
Viewer lamp (5600°K) (1 pc. each)	DY9-2040-000	EUROPE, H.K., etc.
Gray/white chart	DY9-2045-000	U.K.

1-2 Supplies

Table II-2

DESCRIPTION	TOOL NO.	REMARKS
Dia bond No. 1663 UN1133	DY9-3008-000	To fix the tube for the flange back adjustment

* Notes: 1. For recorder mechanism, refer to the mechanical manual for MC-4B (DY8-3391-50201) separately issued.

2. For lens and adopters, refer to the service manuals issued separately.

2. Preparation for Adjustment (Camera/Recorder)

2-1 Preparatory procedure for camera adjustment

2-1-1 Setting

(1) Preparation

- Y/C Mix Amp. II (DY9-1079-001)
- Extension cables (DY9-1176, -1182, -1183)
- Constant voltage supplier

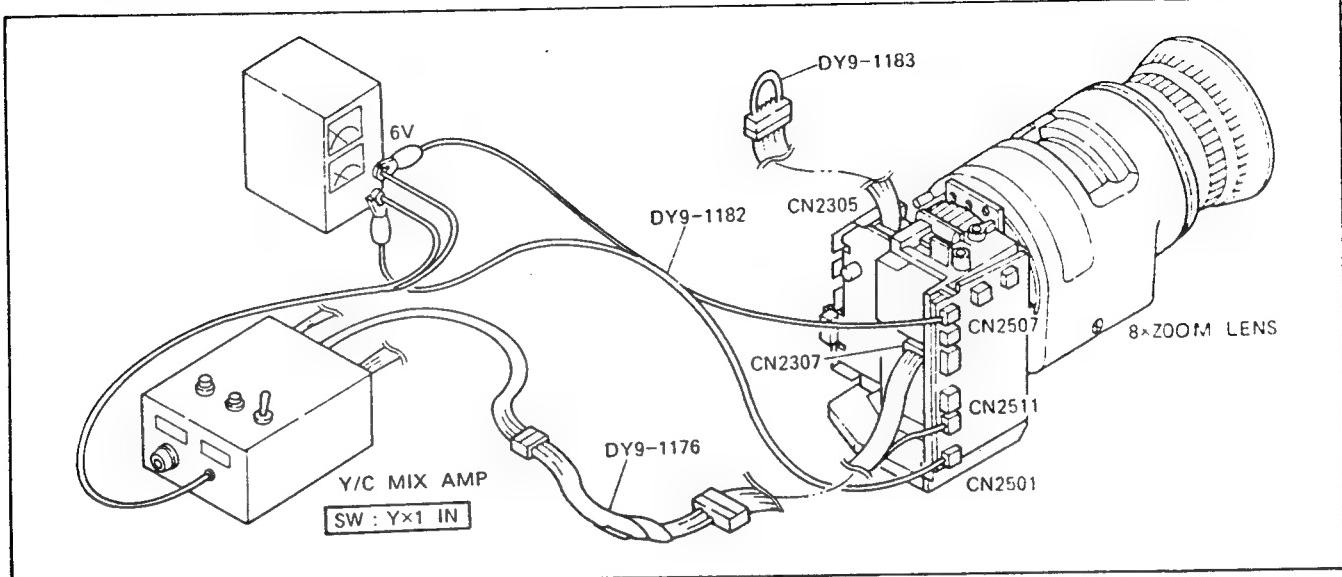


Fig. II-1 Cable connection

2-1-2 AWB adjustment mode

(1) Setting for automatic adjust mode (normally used mode)

- Remove the upper cover, connect the TP2801 (ADJ) of Camera-key (2) P.C.B. to ground, and push the remote control button to display the indication on the screen.

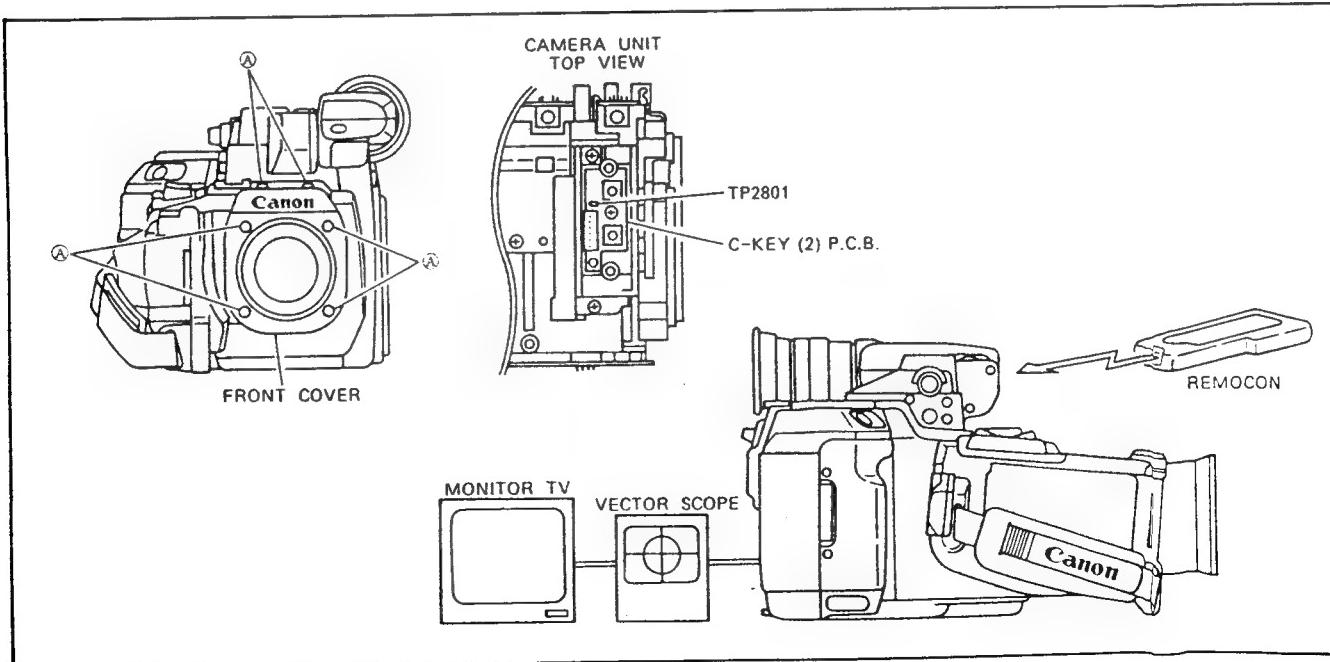


Fig. II-2 Setting for AWB adjustment

(2) Setting for manual adjustment mode

Procedures: 1) Prepare the camera unit.

- 2) Remove the PROCESS (2) P.C.B.
- 3) Remove the R2412 (connected to the pin 34 of Camera Mi-Com IC2304). Then, connect the pin 34 of Camera Mi-Com IC to the +5 V. (By short-circuiting A, the pin 34 can be connected to the +5 V.)
- 4) Reconnect the PROCESS (2) P.C.B., and reassemble other sections to set the condition shown in the Fig. II-3.
- 5) Connect the TP2801 (ADJ) to ground. Then, by pushing the indication button of remote controller, display the relevant character on the screen. Then, perform each adjustment.

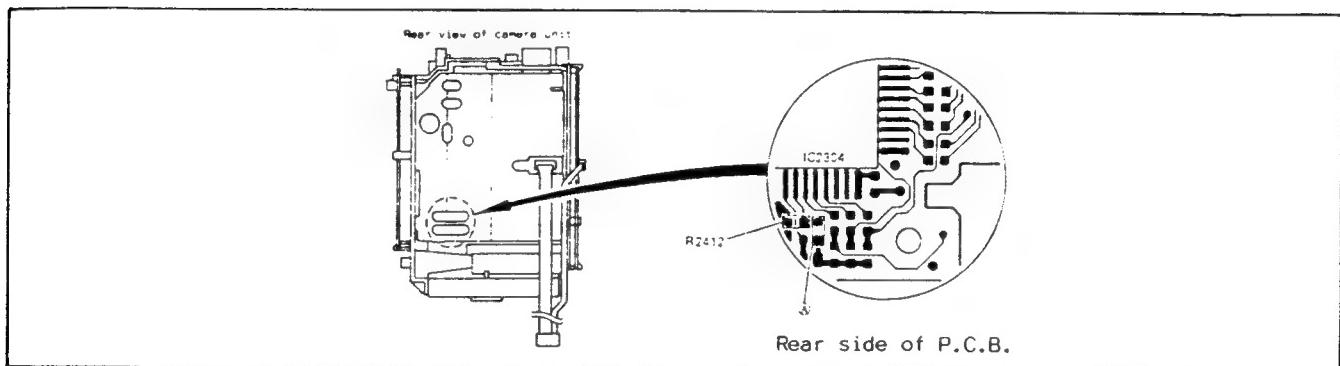


Fig. II-3 Setting for manual adjustment

(3) Adjustment status indication

The following information is displayed in adjustment mode.

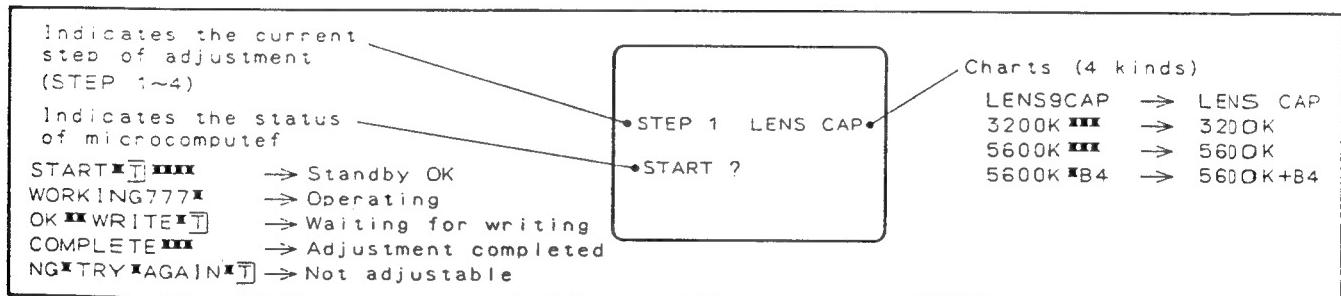


Fig. II-4 Display of adjustment status

(4) Function of adjustment keys

The following function keys are provided for each adjustment.

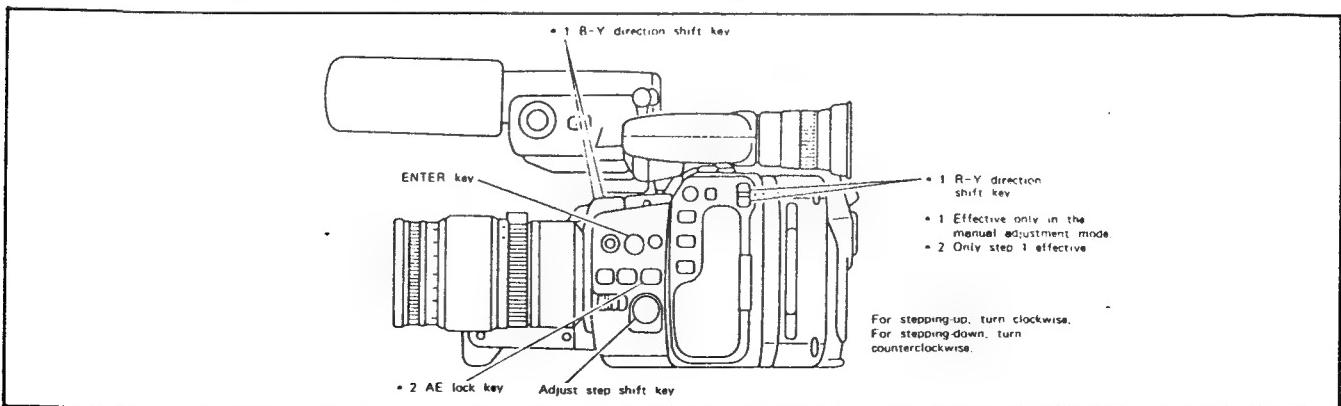


Fig. II-5 Function of adjustment keys

2-1-3 Setting for adjustment of AF threshold level

For the adjustment of AF threshold level, the Character Generator (DY9-1115-000) is used (to display the threshold level number on a screen).

* Note: Shortcircuit the TP2511 and the pin 14 of IC2506.

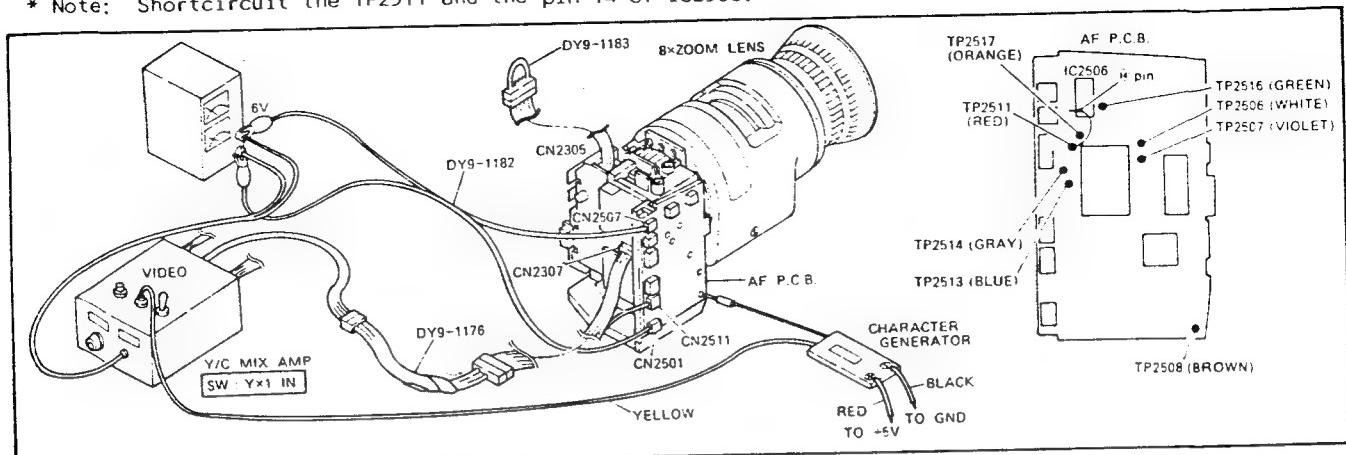


Fig. II-6 Setting I (for video adjustment and operation check)

2-1-4 Other precautions

- (1) Prior to each adjustment, energize the equipment for 3 minutes or more.
- (2) Use a light box of 5600°K.
- (3) "Standard angle of view"
 - The "standard angle of view" is given when the charts displayed so as to meet the maximum screen of the full-scan monitor.
 - With an oscilloscope, adjust the grayscale (37μs) and the color bar (54 μs) followed by shooting.
 - Shoot the white chart at its center.
 - Unless otherwise specified, shooting distance must be 1.4 m (approx.).

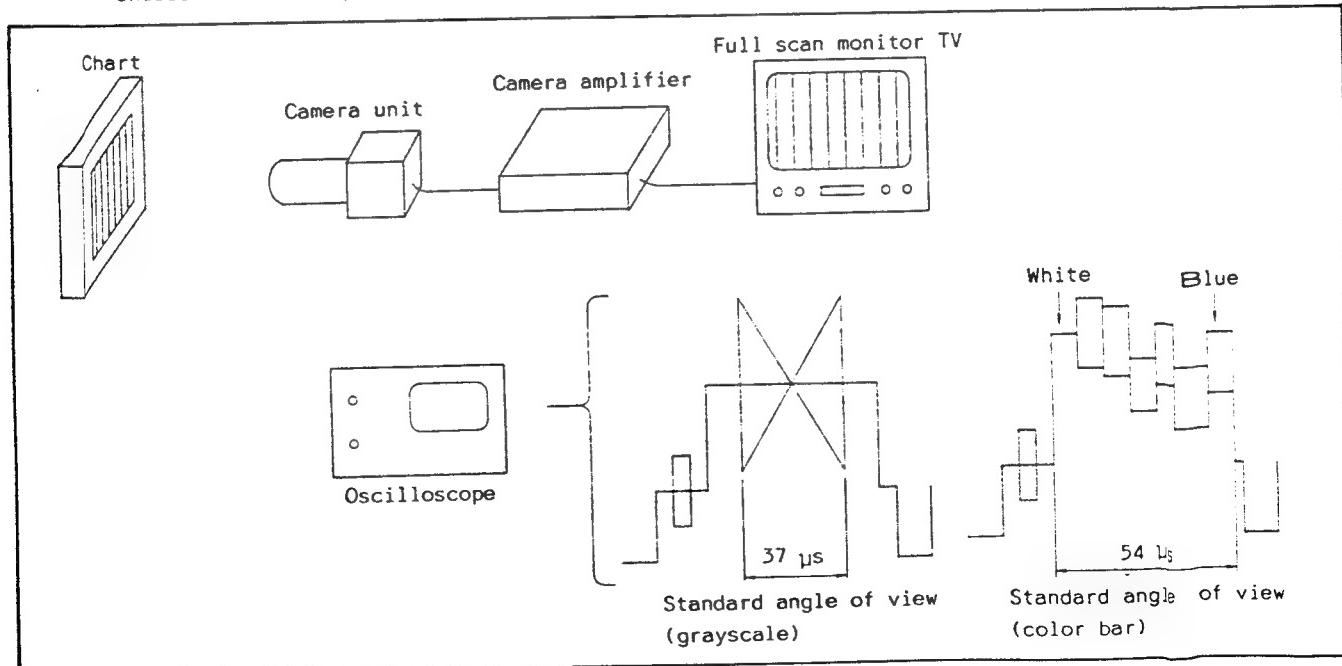


Fig. II-7

2-2 Preparatory procedures for recorder adjustment

2-2-1 Basic setting

(1) Equipments

- Y/C separator (DY9-1093-500): Refer to Y/C separator instruction for setup input level.
- Extension cables (DY9-1152, -1180, -1181, -1182, -1250, -1253, -1255, -1270, -1290)
- Constant voltage power supply (15 V) or camera adapter
- Constant voltage power supply (6 V)

(2) Setting 1 (for VIDEO adjustment/operational checking)

- 1) Remove the AUDIO 1 and 2 P.C.B.s.
- 2) Supply the power with the extension cable (DY9-1181), and send the Y,C signal with extension cable (DY9-1180) to recorder-unit.

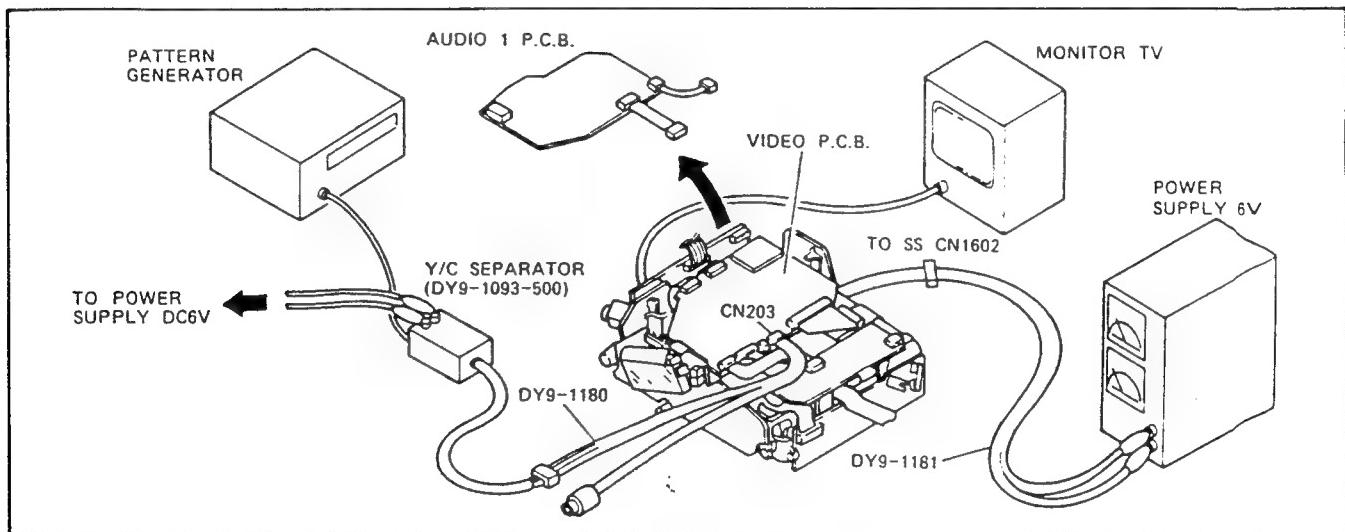


Fig. II-8 Setting 1 (for video adjustment)

(3) Setting 2 (for character display of SS adjustment)

- 1) Connect the EVF-unit to the main unit under setting 1 condition by using the extension cable (DY9-1255).
(Thus character is displayed on monitor TV with a wireless remote controller.)

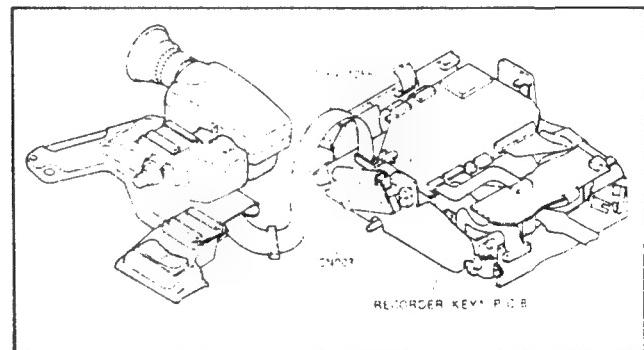


Fig. II-9 Setting 2

(4) Setting 3 (for tape transport + peaking adjustment)

- 1) Under setting 1 condition (take out of AUDIO P.C.B. and connection of Y/C separator are not necessary), take out PB-RF, Head SW pulse with the extension cable (DY9-1152), and adjust.

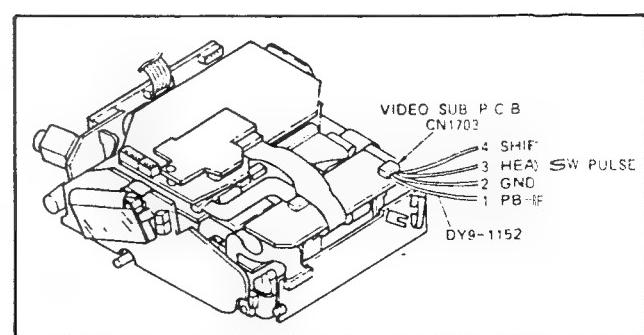


Fig. II-10 Setting 3

(5) Setting 4 (for adjusting and operational checking of DSP)

- 1) Set the setting 1 condition. Then, open the VIDEO P.C.B. with the extension cables (DY9-1250, -1270). (Remove the TERMINAL P.C.B. once for connecting the extension cable.)
- 2) Connect the EVF-unit with the extension cable (DY9-1255).
- 3) Input SC (subcarrier) from a pattern generator to a pin terminal of extension cable (DY9-1180). At this time, separate the output of pattern generator into two ways, and connect the 75Ω terminal resist to either of them.
- 4) Set test mode 4 (DSP mode) by a wireless remote controller.

* Remarks: The DSP operates only when the service mode 4 is set and the SC is input. (Note that, even in the service mode 4, the DSP does not operate without the SC input except in PB mode. Without the SC input, the electric current consumption rises considerably.)

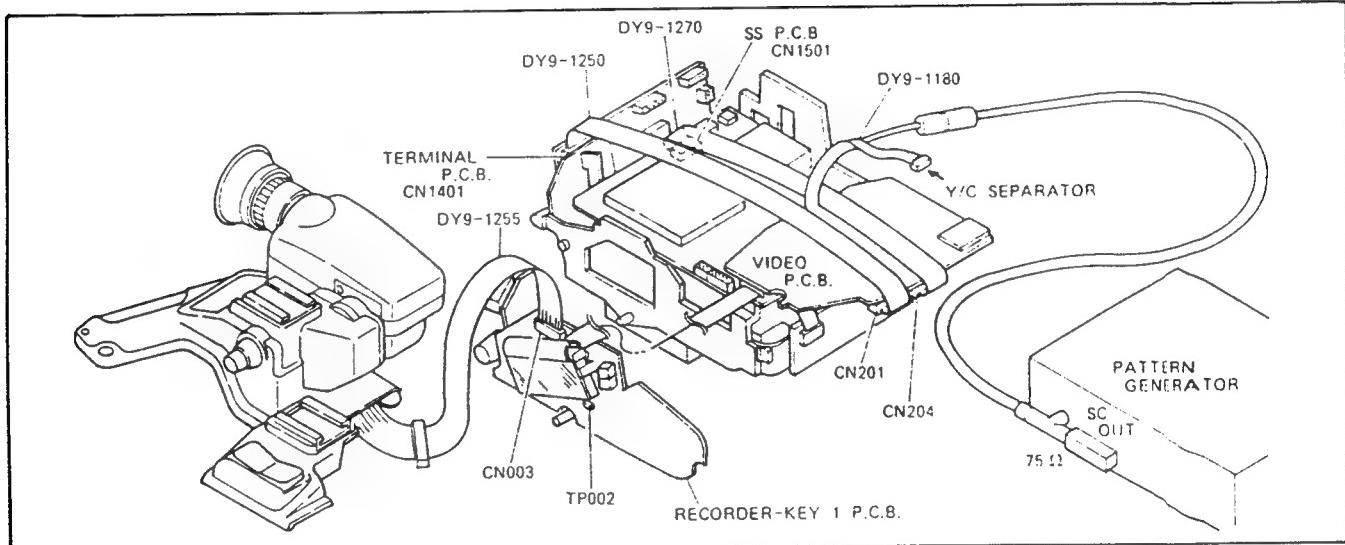


Fig. II-11 Setting 4

(6) Setting 5 (for DSP and other operational checkings)

- 1) By this setting, the camera and recorder units can be adjusted easily with the extension connectors (DY9-1181, -1182, -1253x2, -1290).

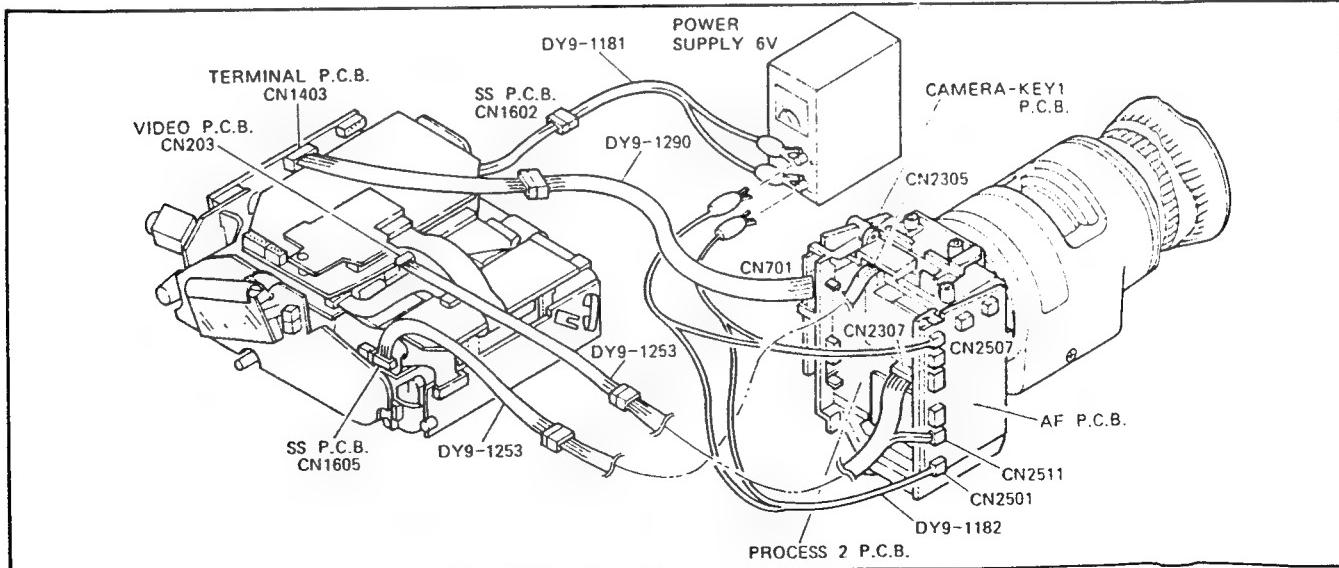


Fig. II-12 Setting 5

2-2-2 How to open P.C.B.s of recorder section

(1) Rear side of VIDEO P.C.B.

- 1) Open the VIDEO P.C.B., by setting the setting 4 condition using the extension cables (DY9-1250, -1270).

(2) Front side of SS P.C.B.

- 1) To check the DSP, set the setting 4 condition.
- 2) To check the underneath VIDEO SUB P.C.B., loosen its seating.

(3) Rear side of SS P.C.B.

- 1) Open the SS P.C.B. using the extension cables (DY9-1147, -1148, -1227, -1228).

At this time, open the RECORDER-KEY 1 and TERMINAL P.C.B.s.

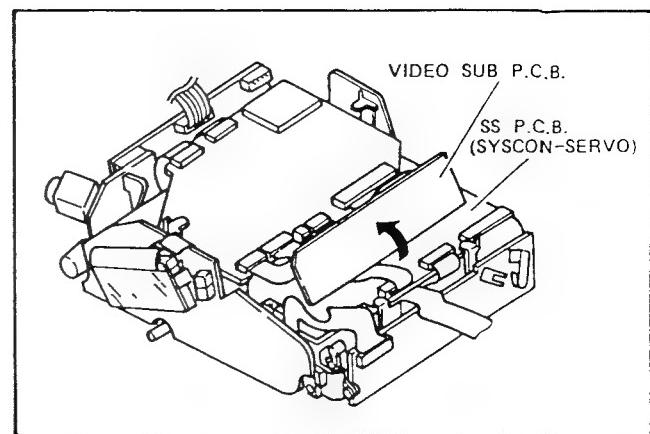


Fig. II-13

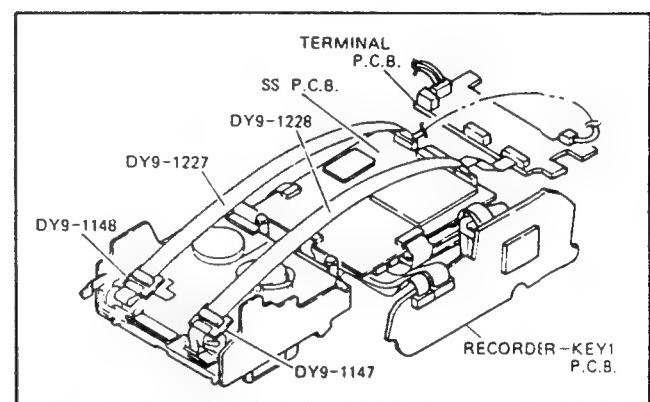


Fig. II-14

2-2-3 Service modes

This model has service mode for adjustments and operation checks. Activate these modes with the recorder and EVF connected for character display.

During the service modes, the following error detections are cancelled:

- ° Drum rotation error
- ° Capstan rotation error
- ° Reel rotation error

(1) Transition to service mode

Each time pattern of wireless remote controller (WL-600) is short-circuited, the mode is transferred. Thus operation can be checked without disassembling the body. The mode transfers in the following sequence:

Normal 1 → 2 → 3 → 4 → 5 → 6 → 7 → 8 →
9 → 10 → 11 → Normal

* The step No. of service mode is indicated in LCD, too.

The CLEAR SW (WL-600) is used in steps 1, 2, 3, 5, 6 and 9.

WL-600 DY2-1294-000

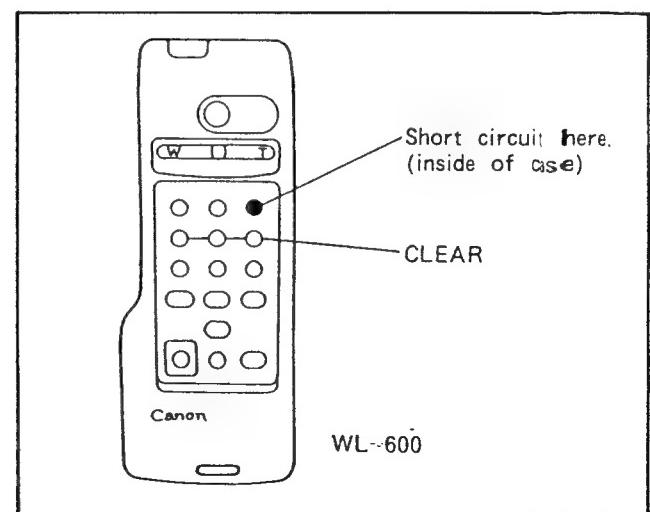


Fig. II-15

(2) Functions of service mode

(Step 1)

Destination setting mode

No use

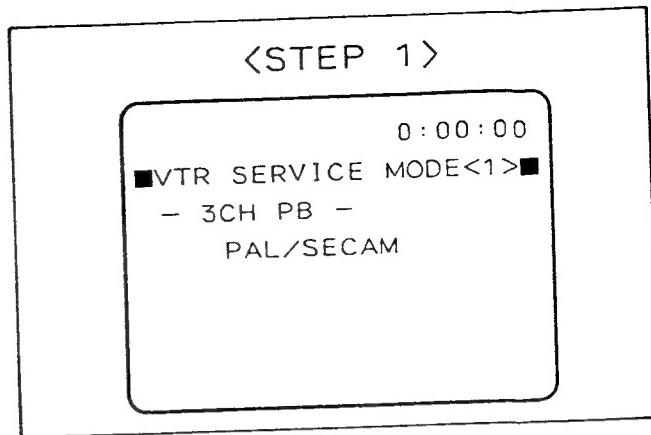


Fig. II-16

(Step 2)

Power saving adjustment mode

- ° B.A/D : Terminal voltage data
- ° B.DATA: Power saving adjustment data

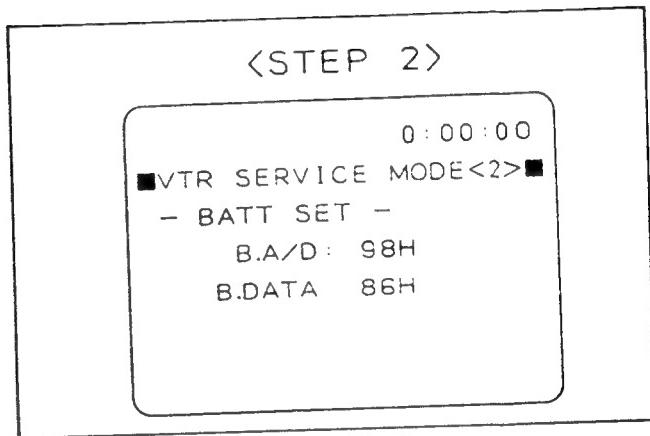


Fig. II-17

(Step 3)

Switching point adjustment mode for factory
(automatic)

- ° PGDLY0 } Switching point adjustment data
- ° PGDLY1 }

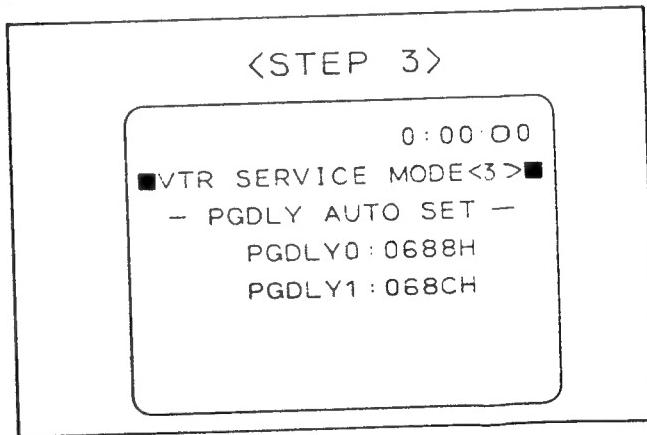


Fig. II-18

(Step 4)

- 1) Tape path adjustment mode (for PB operation)

The RF envelope can be checked in a range of 220 degrees by changing the duty ratio of head switching pulse. Each press of the R-KEY2 '+' causes cyclic state transition as shown below.

→ 180/ON → 220/SHIFT → 220/ON →

- ° 180/ON Normal state
- ° 220/SHIFT ... Under 25%-track-shift condition, the RF envelope of 220 degrees is output.
- ° 220/ON Under on-track condition, the RF envelope of 220 degrees is output.

- 2) DSP check mode (for EE operation)

Each press of the D.E.SELECT key on the TERMINAL P.C.B. causes cyclic state transition as shown below.

→ DSP CLEAR → FREEZE → DSP CLEAR → TELE →

(Steps 5 and 6)

Switching point adjustment mode (manual)

Play back the alignment tape (Tracking B with marker) DY9-1086-001. And, adjust the position of switching pulse by pressing the R-KEY2 '+/-'.

To write data, press the DSP CLEAR button.

(On completion of writing, 'WR!' is indicated at the end of data.)

- ° The step 5 is the adjustment for the fall of switching point.
- ° The step 6 is the adjustment for the rise of switching point.

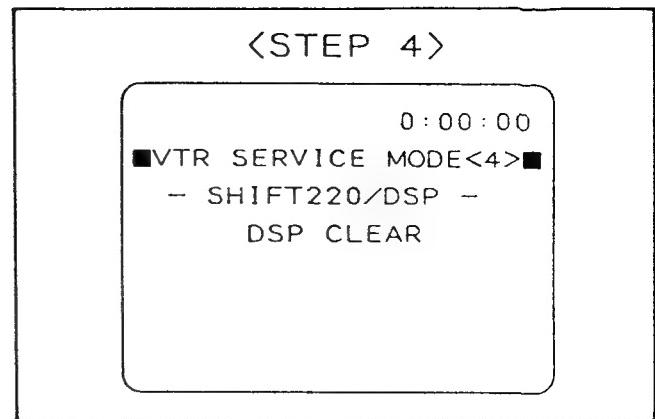


Fig. II-19

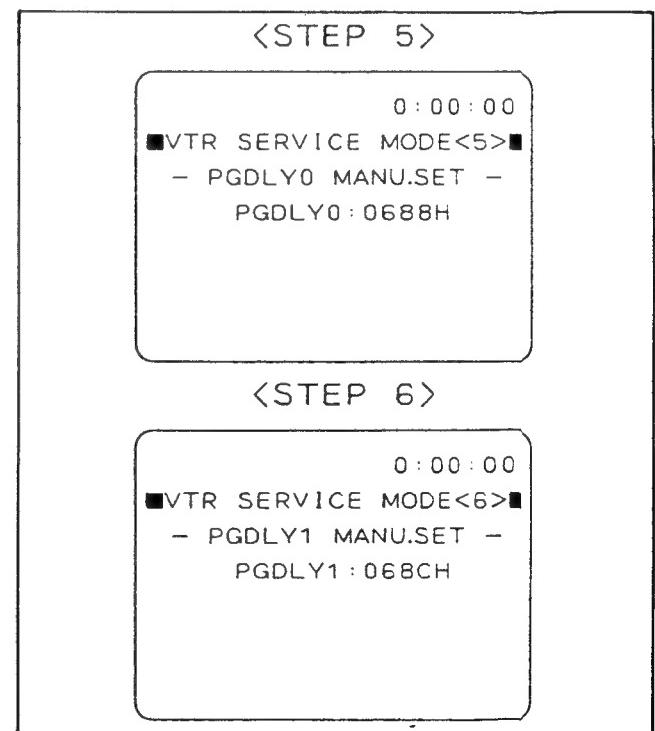


Fig. II-20

(Step 7)

Error indication mode

D Drum
C Capstan
R Reel
A Recording amplifier
L Loading
T Top of tape
E End of tape

In case that any error took place, 'o' is indicated below the relevant error code. Also, the mode in which the error occurred is indicated as ROM data.
(On the screen shown at right, it is indicated that the capstan error took place in the playback mode.)

* Mode codes: 03H: FF 04H: REC 06H: PB
07H: STILL(+)
14H: REC PAUSE 31H: EJECT
46H: CUE 56H: REV
83H: REW 97H: STILL(-)

(Step 8)

Video marker data/error rate display mode
The time code/data code error rate is indicated.

(The error rate during the last 100 V interval period is reported in any case.)

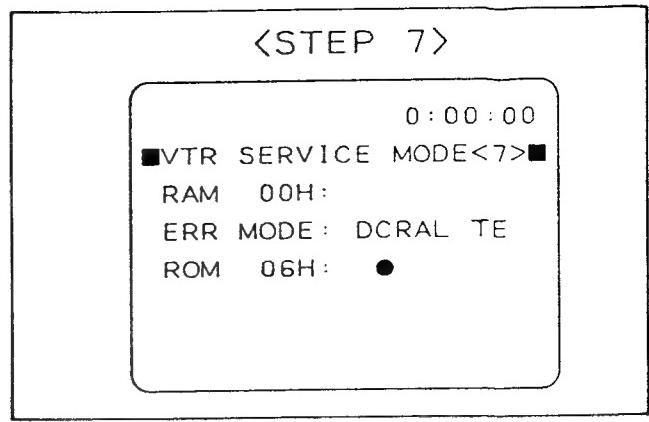


Fig. II-21

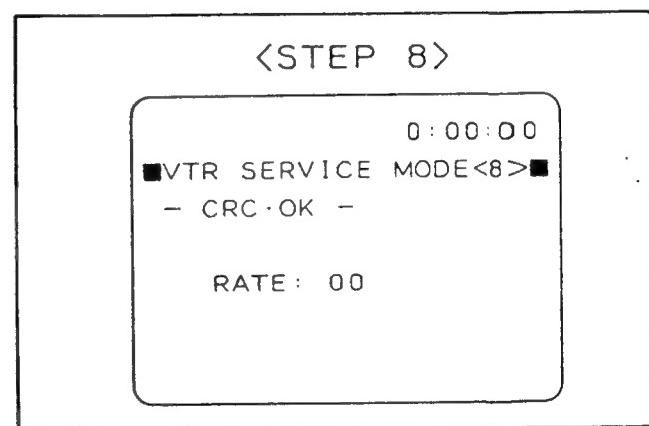


Fig. II-22

(Step 9)

All-clear mode

In this mode, all the contents of E²PROM (IC1603) are cleared (data resetting to FF). Such data as destination, power saving adjustment, switching point, slow tracking, etc. can be initialized.

Press the DSP CLEAR button of wireless controller while holding down the R-KEY2 '+'. Thus, 'ALL CLEAR' is indicated on screen. Then, all the data of E²PROM can be cleared when power is turned off.

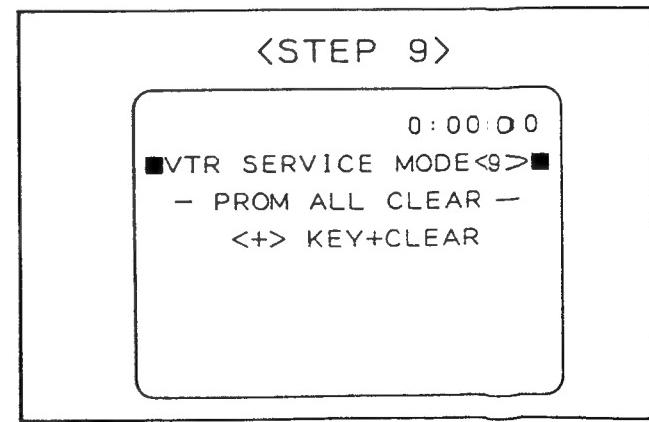


Fig. II-23

(Step 10)

Aging mode

Used for inspection at factory.

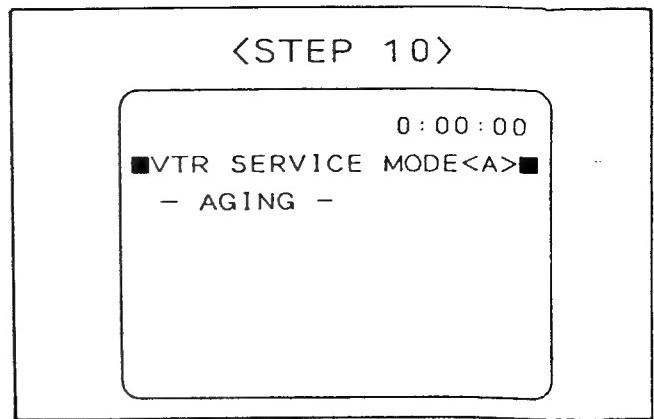


Fig. II-24

(Step 11)

All-LCDs turn-on mode

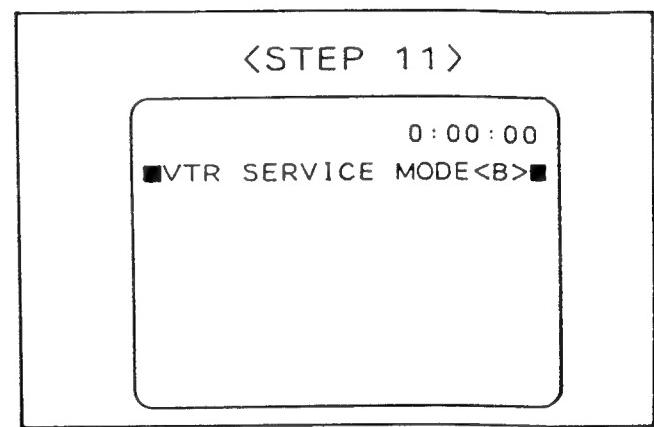


Fig. II-25

3. Adjustment After Replacement

The following table shows the minimal adjustments required after the parts replacement.

3-1 Camera section

Table II-3

No.	Adjustments	Replaced parts						
		CCD	PROCESS 1 P.C.B.	PROCESS 2 P.C.B.	ENCODER P.C.B.	MATRIX P.C.B.	AF P.C.B.	AF MI-COM (IC2503)
5-1	Clock frequency adjustment		●					
5-2	PLL adjustment		●					
5-3	24-gate positioning adjustment		●					
5-4	V SUB adjustment	●	●	●				
5-5	V RGL adjustment	●	●	●				
5-6	Auto iris adjustment	●	●	●				
5-7	Y AGC adjustment	●	●	●				
5-8	Y LEVEL adjustment	●	●	●	●	●	●	
5-9	C2H LEVEL adjustement	●	●	●	●	●	●	
5-10	C LEVEL adjustment	●	●	●	●	●	●	
5-11	Carrier balance adjustment	●	●	●	●	●	●	
5-12	R/B gain adjustment	●	●	●	●	●	●	
5-13	Color balance adjustment	●	●	●	●	●	●	
5-14	FAWB adjustment	●	●	●	●	●	●	
4-1	Flange back adjustment	●	●					●
4-2	AF adjustment	●		●				●

3-2 Recorder section

Table II-4

No.	Adjustments	Replaced parts						
		Drum unit	HEAD AMP ASS'Y.	VIDEO P.C.B.	AUDIO (1), (2) P.C.B.	JOG P.C.B.	SS P.C.B.	SERVO MI- COM.(IC101)
6-1	SS 5V adjustment						●	●
6-2	Undercut adjustment						●	●
6-3	Switching point adjustment	●					●	●
6-4	DSP Y OUT adjustment						●	●
6-5	DSP C OUT adjustment						●	●
6-6	VCO adjustment							
6-7	VIDEO AGC adjustment			●				
6-8	Comb filter adjustment			●				
6-9	VIDEO level adjustment			●				
6-10	Chrominance emphasis adjustment			●				
6-11	Y FM carrier adjustment				●			
6-12	Y FM deviation adjustment				●			
6-13	Y FM carrier (Hi8) adjustment				●			
6-14	Y FM deviation (Hi8) adjustment				●			
6-15	PB Y level (1) adjustment	●		●				
6-16	PB Y level (2) adjustment	●		●				
6-17	Character position of character generator adjustment				●			
6-18	JOG chrominance phase adjustment						●	
6-19	Peaking adjustment	●	●	●	●		●	
6-20	Recording current adjustment	●	●	●	●		●	

4. Trouble Shooting Guide

Before start trouble shooting, prepare following settings.

- (1) Connect a constant power supply to the battery terminal, and monitor the current for preventing a short circuit.

Setting voltage: 6.5V

Setting current: 2.5A max.

Current rate :	Power on (without tape)	REC	Play	FF/REC
With lens	1.3A	1.4A	1.1A	1.6A (It increases 2.0A a moment)
Without lens	1.2A	1.3A	1.1A	1.5A (It increases 1.9A a moment)

- (2) Modified wireless remote controller for setting the service mode. (Refer to Page II-7.)

- (3) Blank tape, pre-recorded tape

Location of P.C.B.

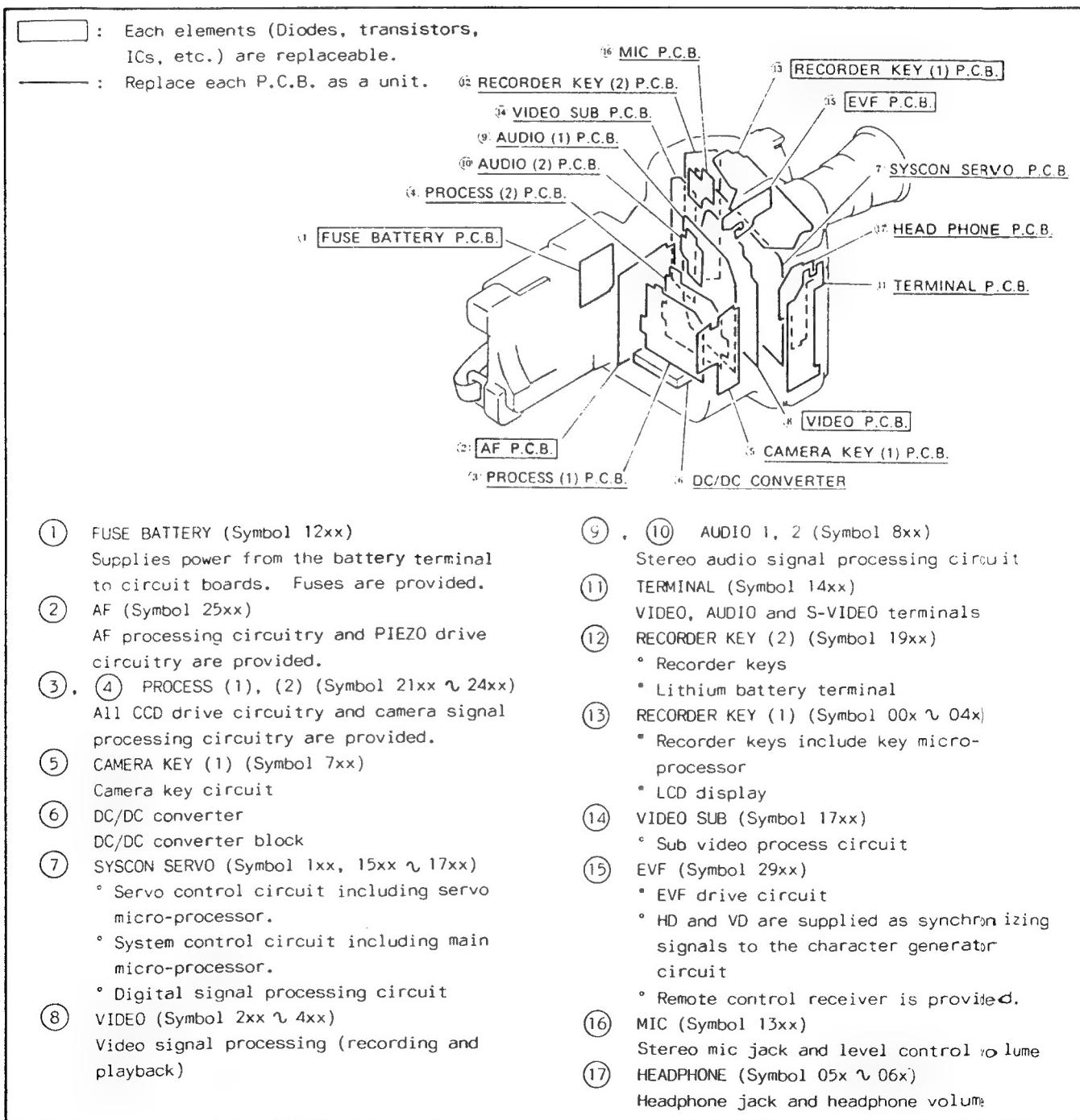
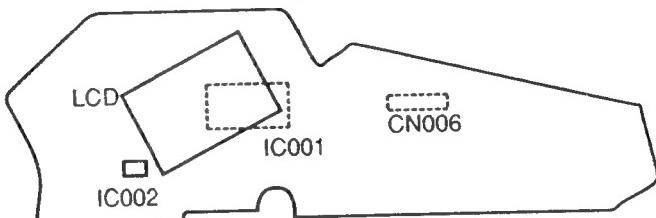
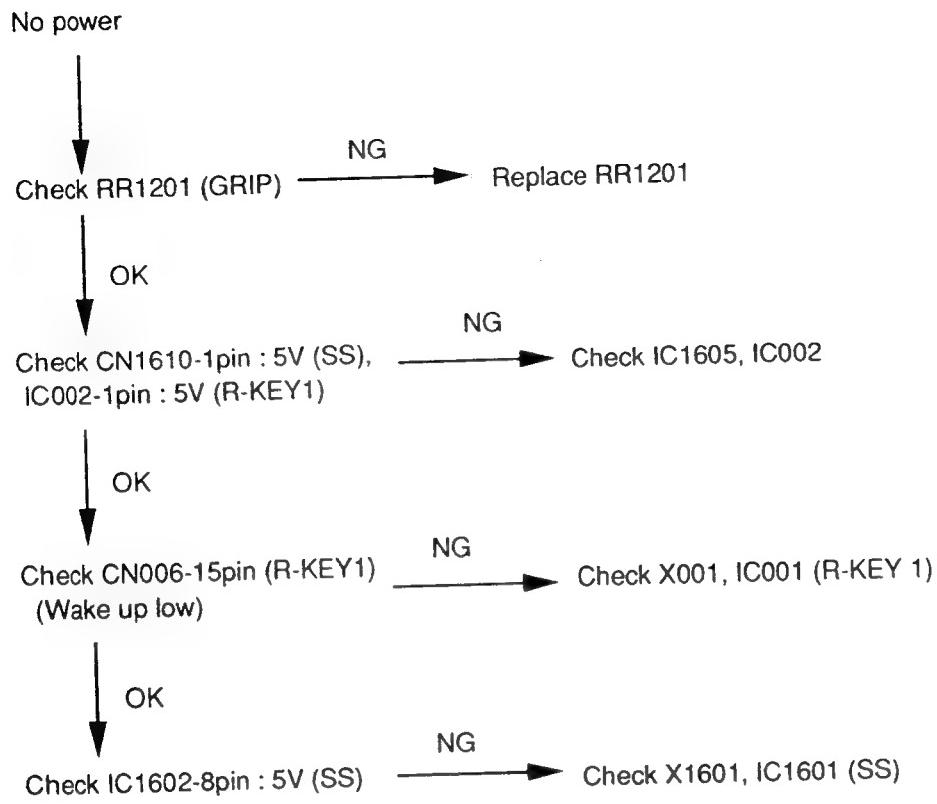
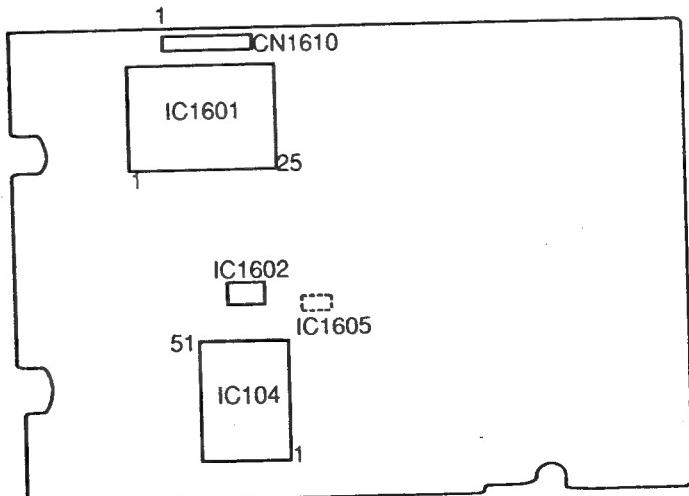


Fig. II-26

4-1. Power trouble



R-KEY 1 PCB



SS PCB

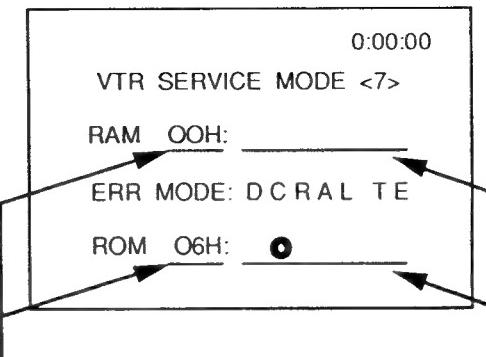
4-2. Error trouble ("EJECT" flashing)

Set service mode <7> and observe a display code.

RAM : Current error detected

ROM : Latest error detected

MONITOR TV



Mode code

Error mode

Display "●" at error detected

(Ex. Latest error detected at Capstan motor in PB mode.)

Mode code

- 02 : STOP
- 03 : FF
- 04 : REC
- 06 : PB
- 07 : STILL (+)
- 14 : REC/PAUSE
- 31 : EJECT (unloading)
- 46 : CUE
- 56 : REV
- 83 : REW
- 97 : STILL (-)

Error mode

- D : Drum error
- C : Capstan error
- R : Reel error
- A : Rec amp.
- L : Loading error
- T : Tape top
- E : Tape end

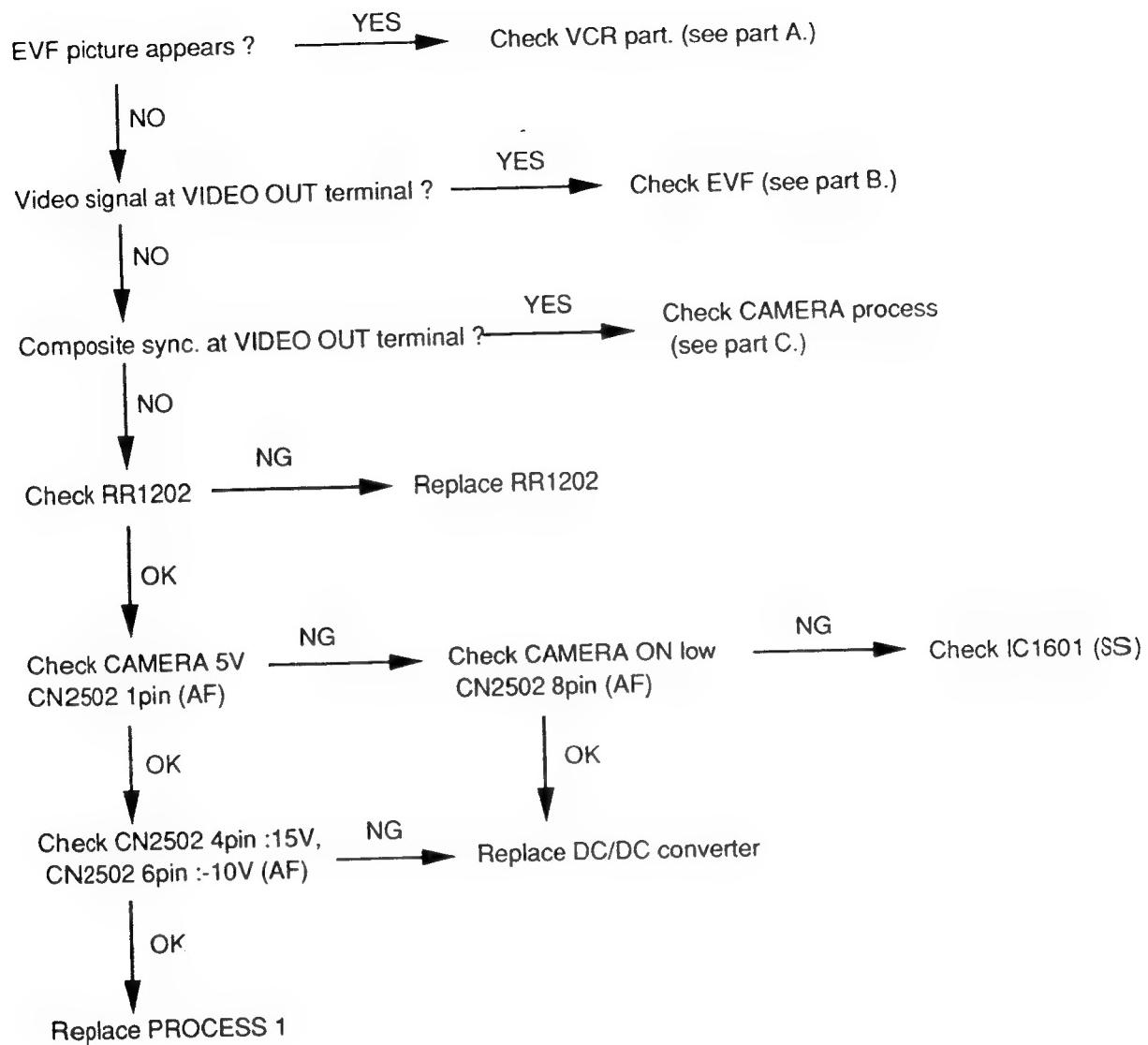
Notes : Error code on ROM data is memorized by EEPROM even power off.

If the errors above listed appear, check the related parts as follows.

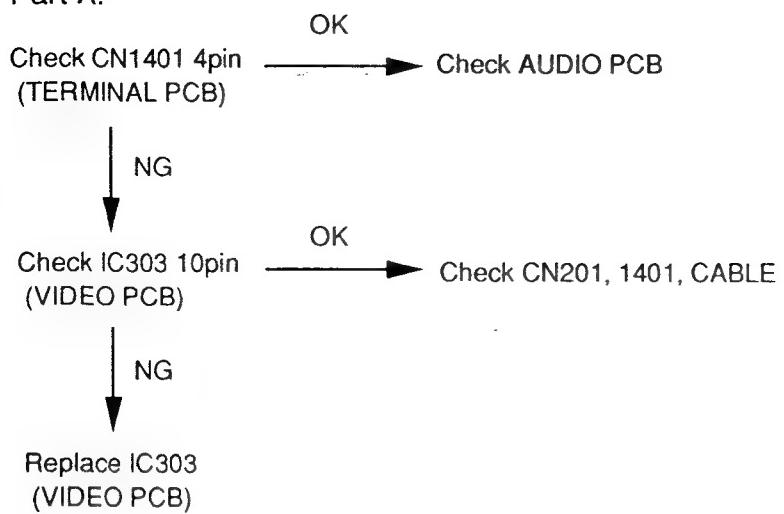
- Reel error : Check reel FG sensor, reel table etc.
- Tape top, end : Check tape end sensor,sensor LED.
- Rec amp. : Check Head amp.
- Loading error : Check loading motor, MECH. alignment.
- Capstan error : Check capstan motor, motor driver (IC100) etc.
- Drum error : Check drum motor, motor driver (IC101) etc.

4-3. VIDEO trouble

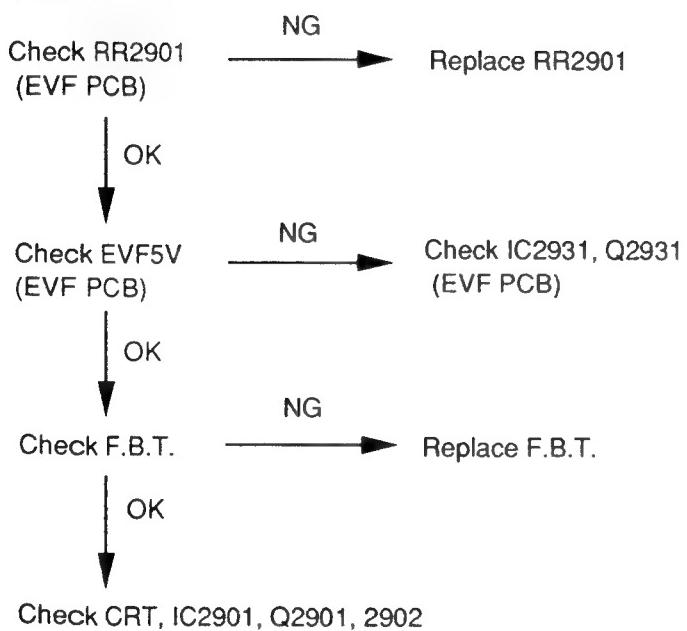
No EE picture



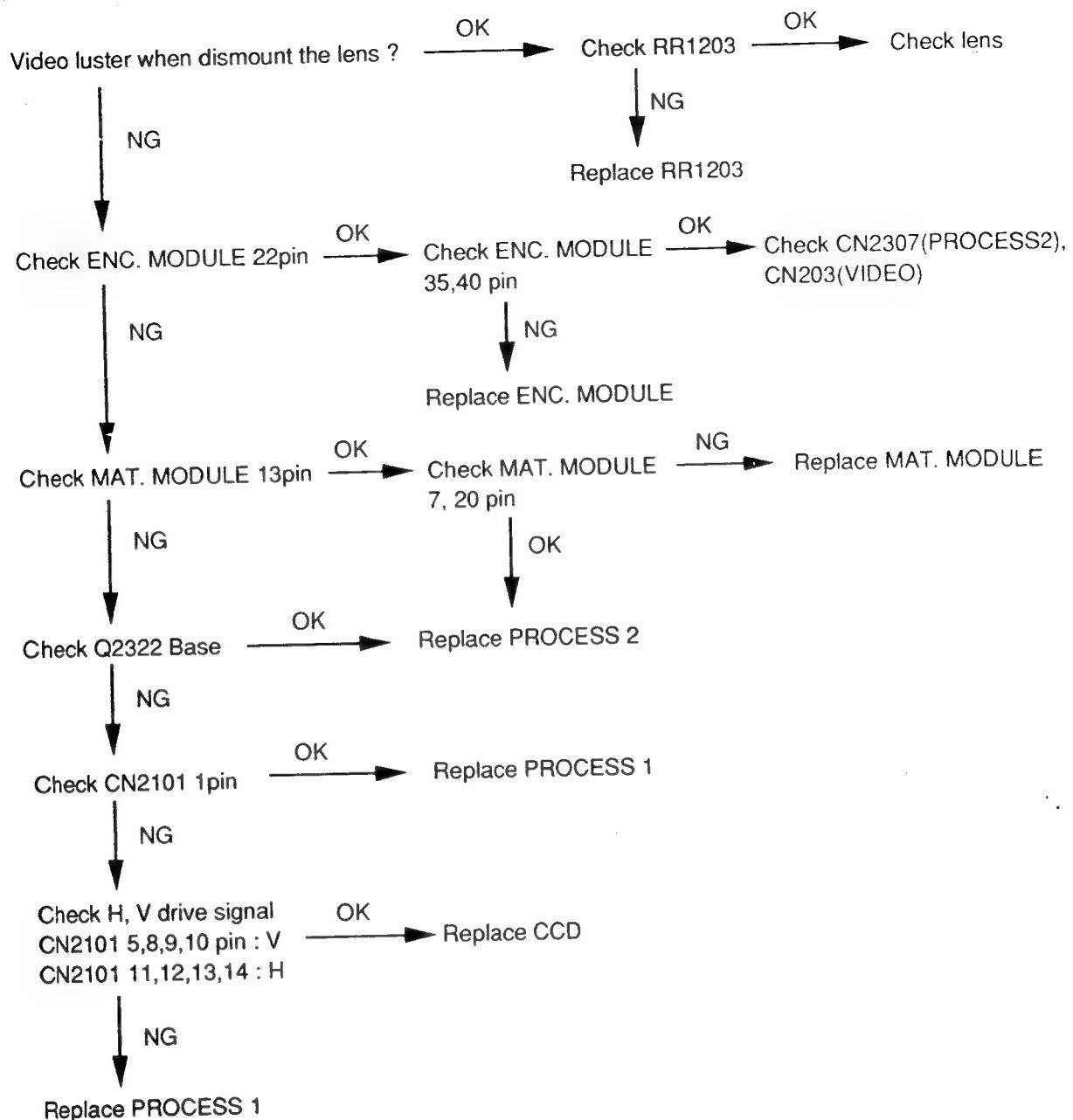
Part A.



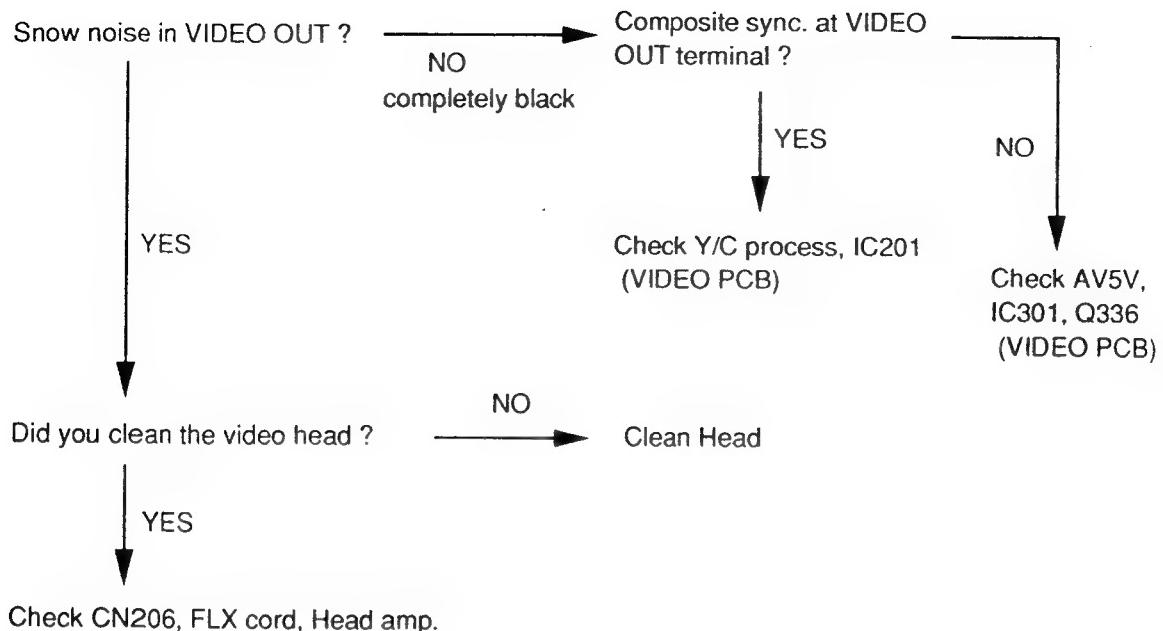
Part B.



Part C.

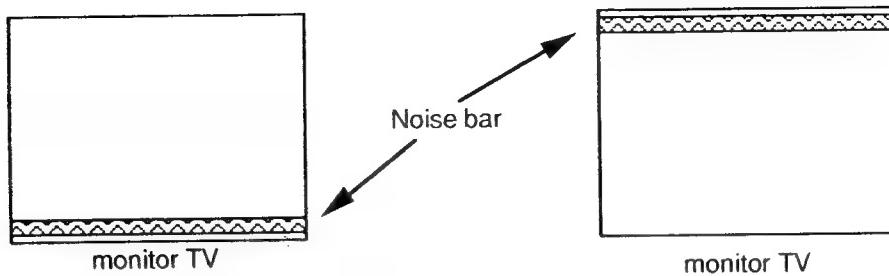


No Video (VV)

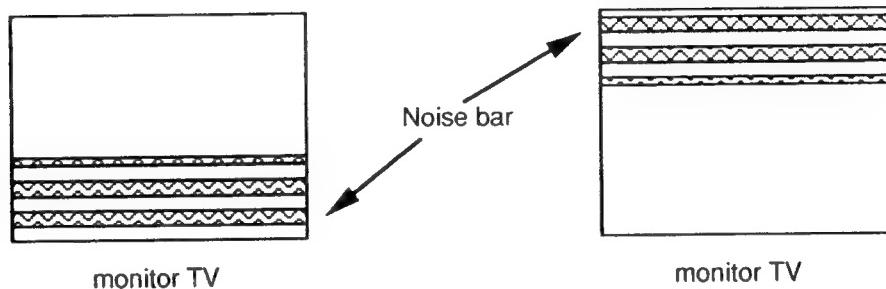


Noise bar on P.B. Video

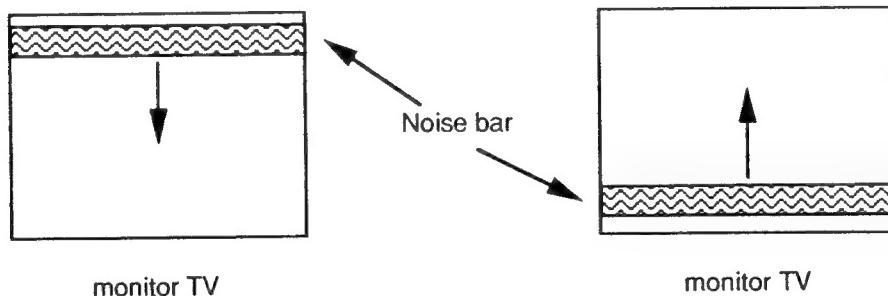
1. Noise-bar appear on top or bottom of picture, or V jittering



2. A few noise-bar appear on top or bottom of screen



3. Noise bar rolling from top to bottom or bottom to top

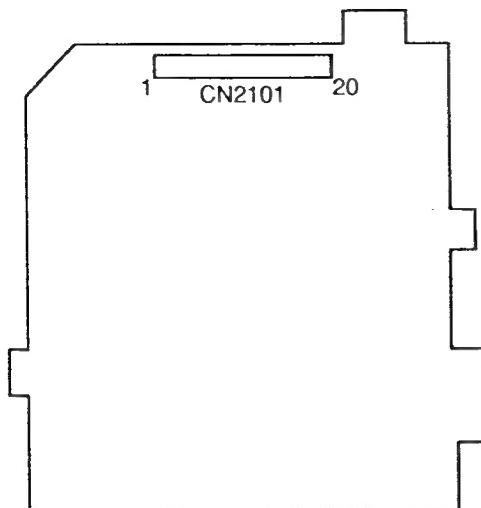


Case 1 : Check tape path (TG-3, TG-6), switching point

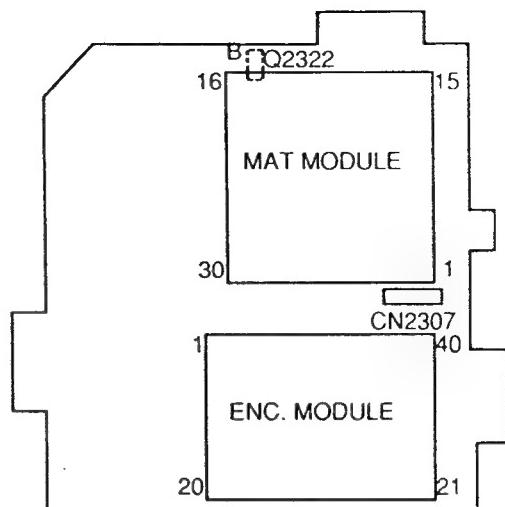
Case 2.: Check Tape path, check loading mech.

Case 3 : Check ATF, check capstan motor.

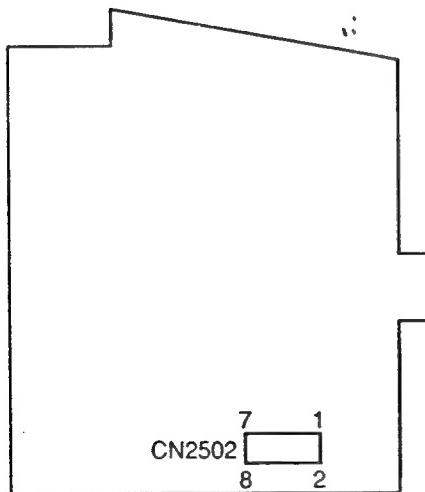
4-4. Diagram of check point



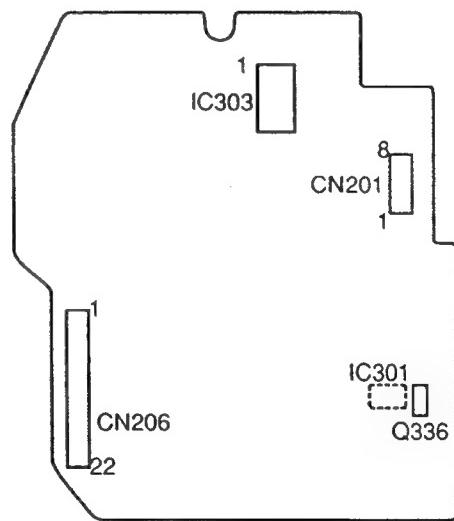
PROCESS 1 PCB



PROCESS 2 PCB



AF PCB



VIDEO PCB

CHAPTER III. DISASSEMBLING/ADJUSTMENTS

1. Disassembling	
1-1 Disassembling of covers	III-1
1-1-1 Removal of finder, and cassette cover	III-1
1-1-2 Removal of front and grip rear covers	III-1
1-1-3 Removal of upper cover	III-1
1-1-4 Removal of left cover	III-1
1-1-5 Separation of camera and recorder units	III-2
1-1-6 Removal of rear cover	III-2
1-1-7 Removal of right cover	III-2
1-1-8 Separation of upper cover and EVF unit	III-2
1-2 Disassembling of camera section	III-3
1-2-1 Removal of camera key (1), (2) and AF P.C.B.s	III-3
1-2-2 Removal of camera holder (1) and (2)	III-3
1-2-3 Removal of process P.C.B.	III-3
1-2-4 Disassembling of CCD	III-3
1-2-5 Disassembling of actuator section	III-4
1-2-6 Disassembling of camera mount section (1)	III-4
1-2-7 Disassembling of camera mount section (2)	III-4
1-3 Disassembling of recorder section	III-5
1-3-1 Removal of R-KEY 2, VIDEO-SUB and AUDIO-2 P.C.B.s	III-5
1-3-2 Removal of AUDIO-1 P.C.B.	III-5
1-3-3 Removal of VIDEO, TERMINAL and R-KEY 1 P.C.B.s	III-5
1-3-4 Removal of Recorder Holders (1), (2) and HEADPHONE P.C.B.	III-5
1-3-5 Removal of SYSCON-SERVO P.C.B. and Recorder Holders (3), (4)	III-6
1-4 Wiring	III-6
2. Lens Adjustment	
2-1 Flange back adjustment	III-8
2-2 AF adjustment	III-9
2-2-1 Clock adjustment	III-9
2-2-2 ES offset adjustment	III-9
2-2-3 Piezo drive adjustment	III-9
2-2-4 ES threshold level adjustment	III-9
3. Electrical Adjustments of Camera Section	
3-1 Clock frequency adjustment	III-10
3-2 PLL adjustment	III-10
3-3 Gate positioning adjustment (for 24-section system)	III-10
3-4 V SUB adjustment	III-10
3-5 V RGL adjustment	III-10
3-6 Auto iris adjustment	III-10
3-7 Y AGC adjustment	III-11
3-8 Y LEVEL adjustment	III-11
3-9 C LEVEL adjustment	III-11
3-10 C2H LEVEL adjustment	III-11
3-11 Carrier balance adjustment	III-12
3-12 R/B GAIN adjustment	III-12
3-13 Color balance adjustment	III-12
3-14 FAWB adjustment	III-12
3-14-1 FAWB (Full Auto White Balance) auto adjustment	III-13
3-14-2 FAWB (Full Auto White Balance) manual adjustment	III-14

4.	Electrical Adjustments (Recorder/EVF Section)	
4-1	SS5V adjustment	III -17
4-2	Undercut adjustment	III -17
4-3	Switching point adjustment	III -17
4-4	RCTC-PLL adjustment	III -17
4-5	DSP Y OUT level adjustment	III -18
4-6	DSP C OUT level adjustment	III -18
4-7	VIDEO AGC adjustment	III -18
4-8	Comb filter adjustment	III -18
4-9	Video level adjustment	III -19
4-10	Chrominance emphasis adjustment	III -19
4-11	Y FM carrier (normal) adjustment	III -19
4-12	Y FM deviation (normal) adjustment	III -19
4-13	Y FM carrier (Hi8) adjustment	III -19
4-14	Y FM deviation (Hi8) adjustment	III -20
4-15	PB Y level adjustment (1)	III -20
4-16	PB Y level adjustment (2)	III -20
4-17	Character position of character adjustment	III -20
4-18	JOG chromoinance phase adjustment	III -20
4-19	Peaking adjustment	III -21
4-20	Recording current adjustment	III -21
5.	EVF Adjustments	
5-1	Free-run frequency adjustment	III -24
5-2	Vertical amplitude adjustment	III -24
5-3	Rotation and centering adjustment	III -24
5-4	Brightness adjustment	III -24
5-5	Focus adjustment	III -24
6.	Mechanical Adjustment of Recorder Section	
6-1	Mechanical adjustments	III -25
6-2	How to drive loading motor	III -25
6-3	Replacement of upper drum	III -25

1-1-3 Removal of upper cover

1. Disassembling

1-1 Disassembling of covers

1-1-1 Removal of finder, and cassette cover

- (1) Dismount the finder.
- (2) Remove two cassette cover seals.
- (3) Remove two screws (a).
- (4) Remove the cassette cover.

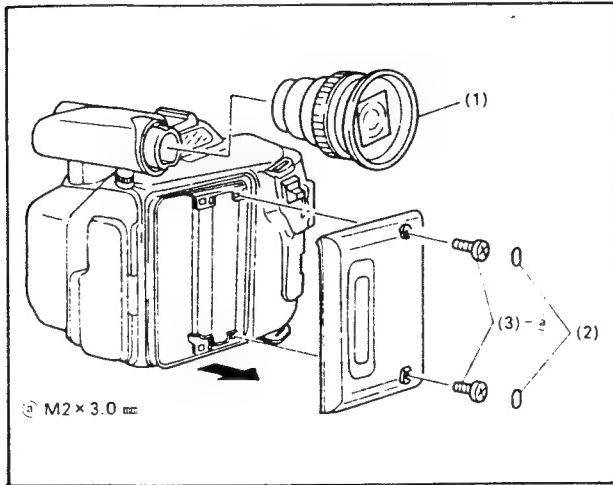


Fig. III-1

1-1-2 Removal of front and grip rear covers

- (1) Remove two screws (a) and four screws (b).
- (2) Remove the front cover.
- (3) Remove four screws (b) and one screw (c).
- (4) Remove the grip rear cover.

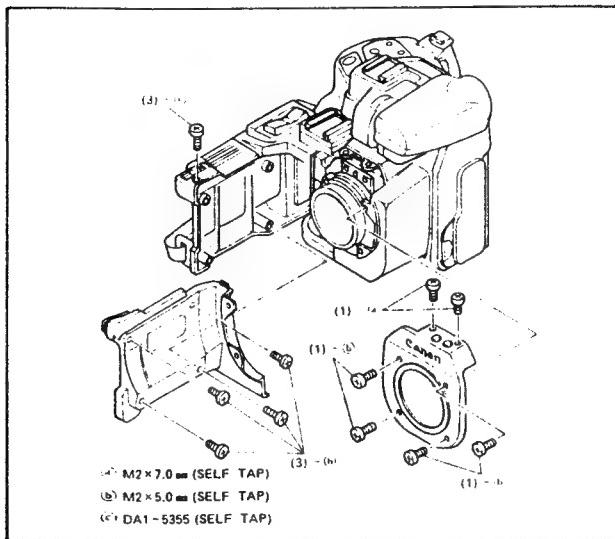


Fig. III-2

- (1) Remove four screws (a) and two screws (b).
- (2) While picking up the upper cover, unplug the CNs 003, 901, 1303 and 2506.
- (3) Dismount the upper cover.

* Note: For reassembling, check the wiring referring to the Figs. III-21 and 22.

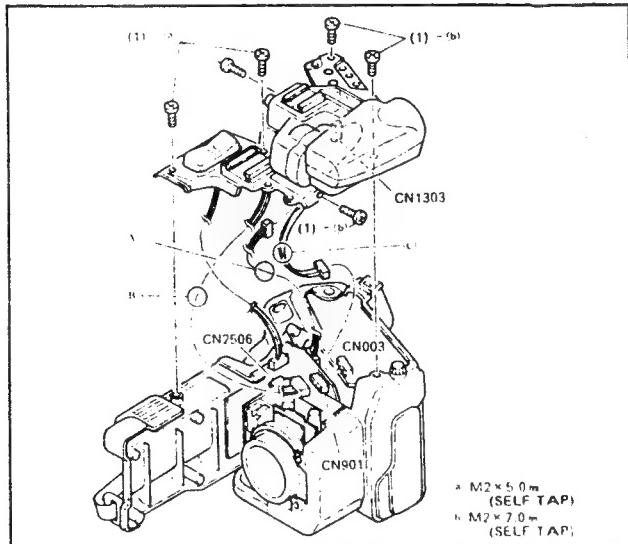


Fig. III-3

1-1-4 Removal of left cover

- (1) Unclaw (A) by removing three screws (a).
- (2) Unplug the CN003 and 004.
- (3) Unplug the CN1201, CN2501 and CN2507.
- (4) Dismount the left cover.

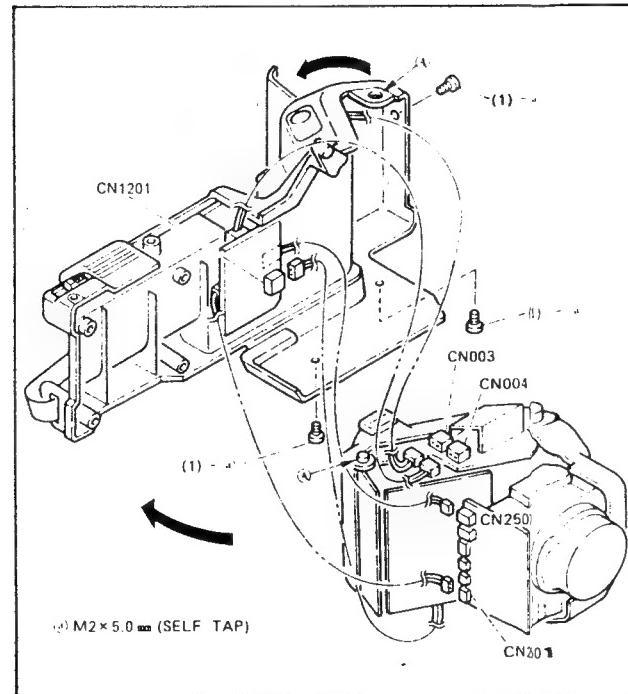


Fig. III-4

1-1-5 Separation of camera and recorder units

- (1) Remove a screw **a**.
- (2) Detach the camera unit.
- (3) Unplug the CNs 203, 902, 1605, 2505 and 2701.

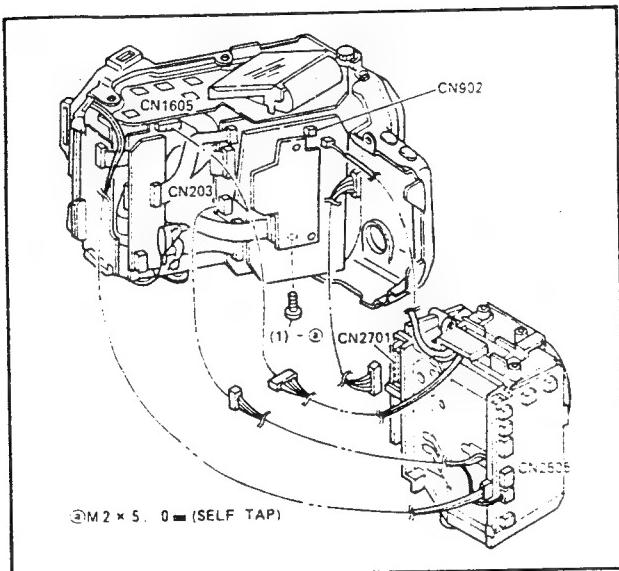


Fig. III-5

1-1-6 Removal of rear cover

- (1) Remove three screws **a**.
- (2) Release **A**.
- (3) Release **B** (four points). Then, remove the rear cover.

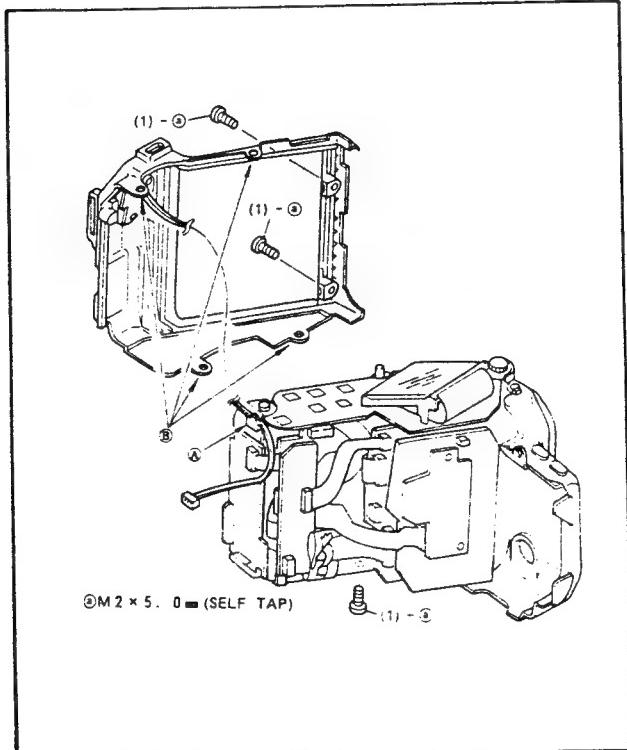


Fig. III-6

1-1-7 Removal of right cover

- (1) Open the jack cover, and remove the screw **a**.
- (2) Remove the eject knob.
- (3) Remove the right cover by unclawing the **B**.

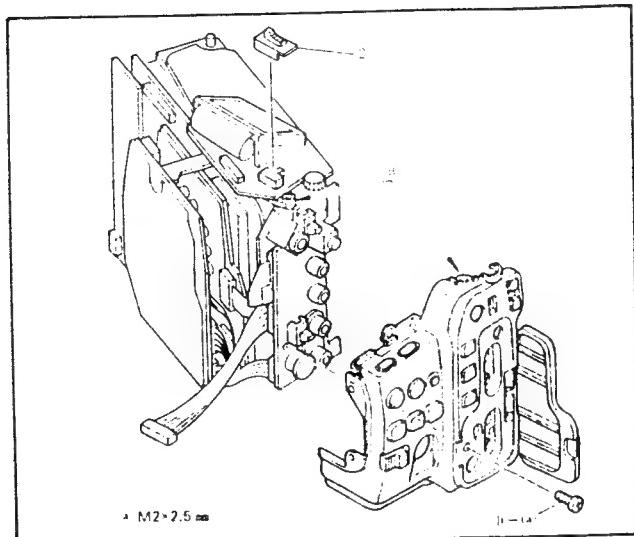


Fig. III-7

1-1-8 Separation of upper cover and EVF unit

- (1) Remove two screws **a** and one screw **B**.
- (2) Separate the upper cover from the EVF section.
- (3) Remove two screws **C** and one screw **d**.
- (4) Remove the EVF upper cover.

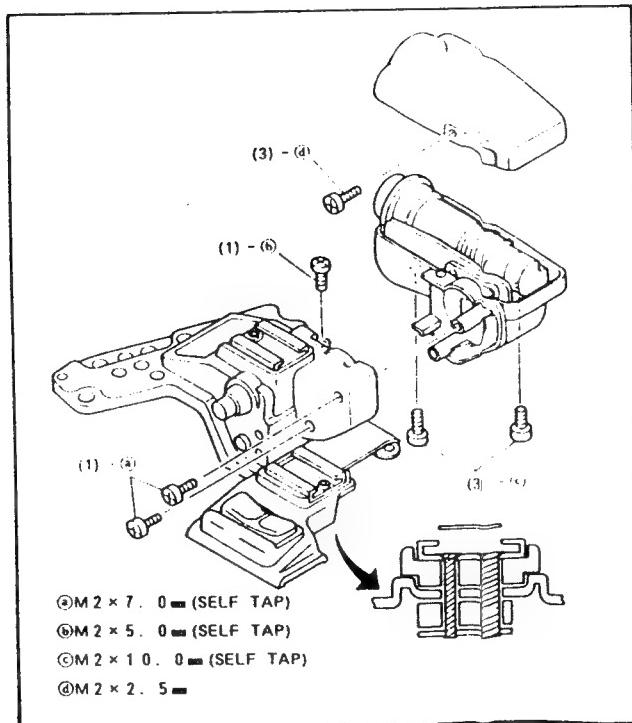


Fig. III-8

1-2 Disassembling of camera section

1-2-1 Removal of camera key (1), (2) and AF P.C.B.s

- (1) Remove two screws (a) and two screws (b).
- (2) Dismount the camera key (2) P.C.B. by unplugging the CN2703.
- (3) Remove the camera key (1) P.C.B.
- (4) Unplug the CNs 2508, 2509, 2510 and 2511. Then, while unclawing (C), (D), (E) and (F), dismount the AF P.C.B.

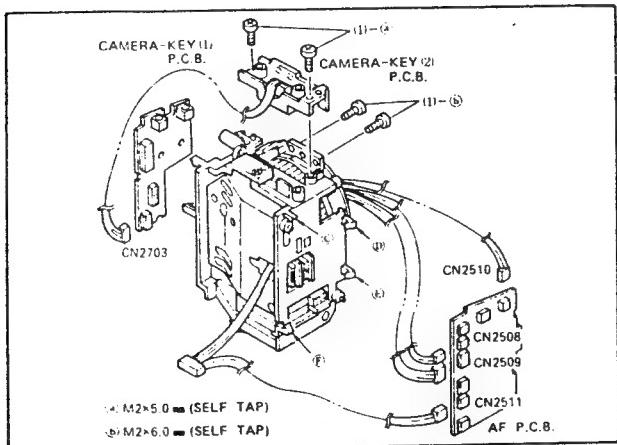


Fig. III-9

1-2-2 Removal of camera holder (1) and (2)

- (1) Remove the DC/DC converter.
- (2) Remove three screws (a), and dismount the camera holder (1).
- (3) Unplug two connectors.
- (4) Unsolder (A)s. (Two points)
- (5) Remove two screws (a), and dismount the camera holder (2).

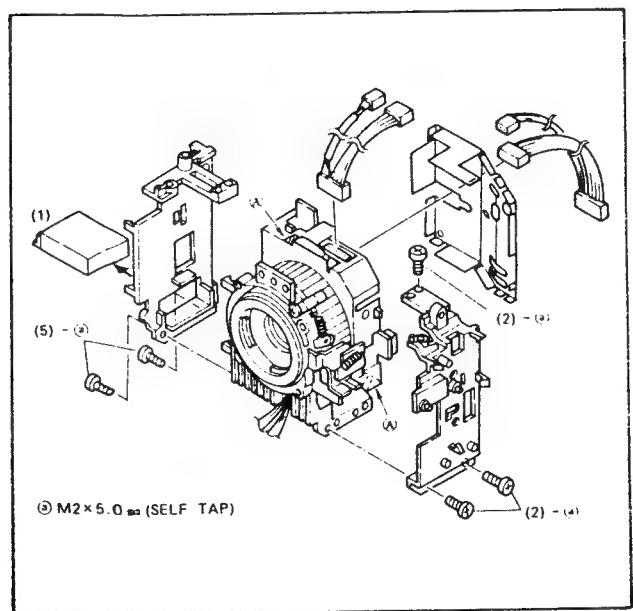


Fig. III-10

1-2-3 Removal of process P.C.B.

- (1) Unsolder (B)s. (Two points)
- (2) Open the section of process P.C.B. by 180°. Then, unplug the CN2101.
- (3) Remove the section of process P.C.B.
- (4) Unsolder (C)s. (Nine points)
- (5) Dismount the process (1) and (2) P.C.B.s.

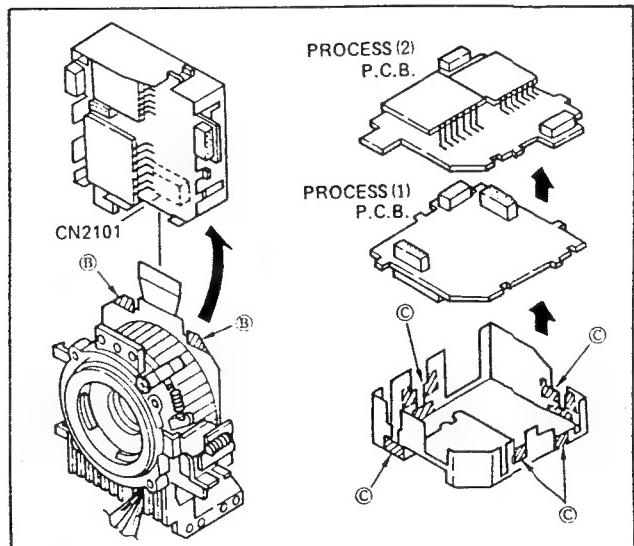


Fig. III-11

1-2-4 Disassembling of CCD

- (1) Remove the flexible connector.
- (2) Remove the shield plate by unplugging the connector.
- (3) Remove the flexible connector by unsoldering the pins of CCD (20 pins).
- (4) Remove two screws (a).
- (5) Remove the rubber, and the crystal filter attached with the CCD holder.

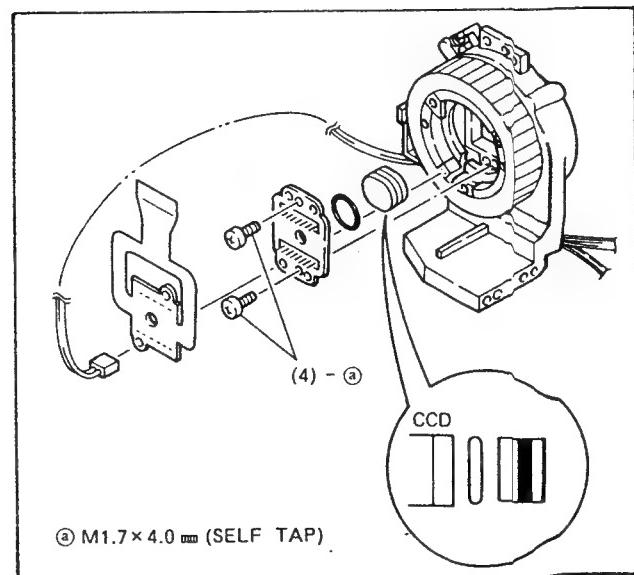


Fig. III-12

1-2-5 Disassembling of actuator section

- (1) Remove the adjuster ring.
- (2) Dismount the actuator section.
- (3) Disassemble the actuator section by removing three screws (a).
- (4) Remove three springs.

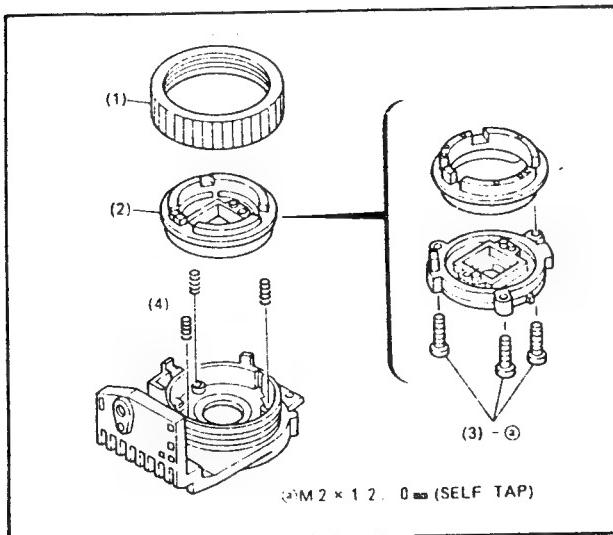


Fig. III-13

1-2-6 Disassembling of camera mount section (1)

- (1) Dismount the camera mount section by removing six screws (a).
- (2) Remove the mount spring coil.
- (3) Remove the lock spring (2).
- (4) Remove two screws (b).
- (5) Remove the lever retainer, the C lock lever and the C lock pin.

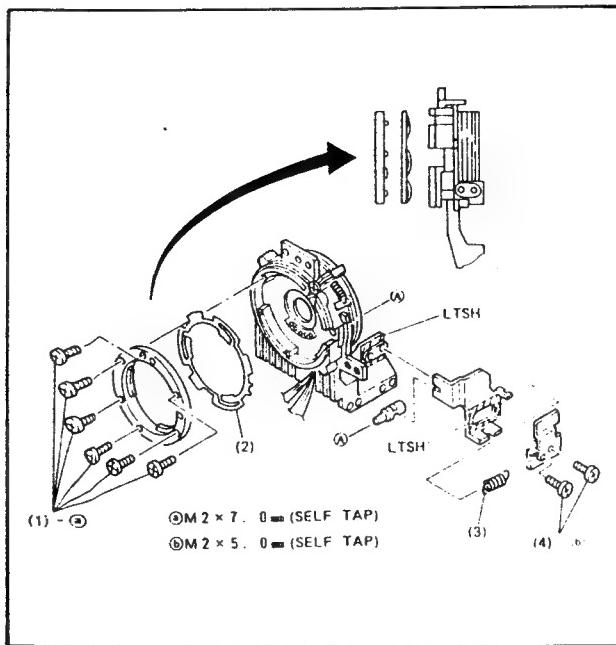


Fig. III-14

1-2-7 Disassembling of camera mount section (2)

- (1) Remove two screws (a).
- (2) Remove the lever guide.
- (3) Remove the screw (b).
- (4) Remove the switch lever and the lock spring (1).
- (5) Remove two screws (c).
- (6) Remove the contact assembly.

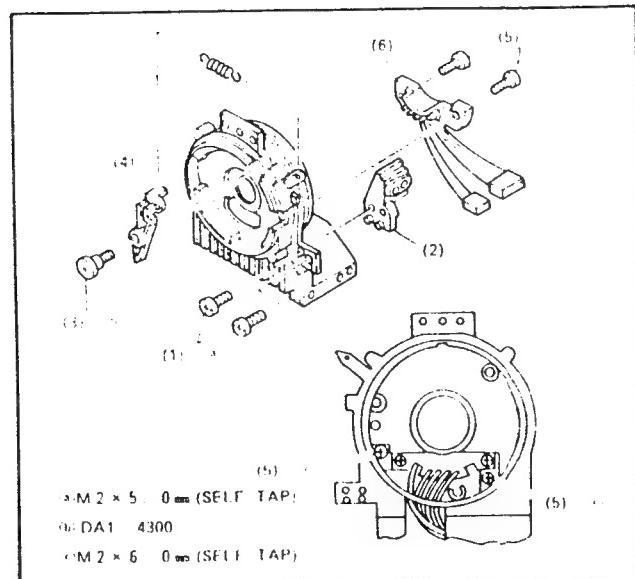


Fig. III-15

1-3 Disassembling of recorder section

1-3-1 Removal of R-KEY 2, VIDEO-SUB and AUDIO-2 P.C.B.s

- (1) Unplug the CN1901, and remove the screw (a).
- (2) Remove the R-KEY 2 P.C.B.
- (3) Unplug the CN 1701 and 1702, and remove two screws (a).
- (4) Remove the VIDEO-SUB P.C.B.
- (5) Remove the screw (a) and the VIDEO shield plate 2.
- (6) Remove the AUDIO-2 P.C.B. by unplugging the CN1802.

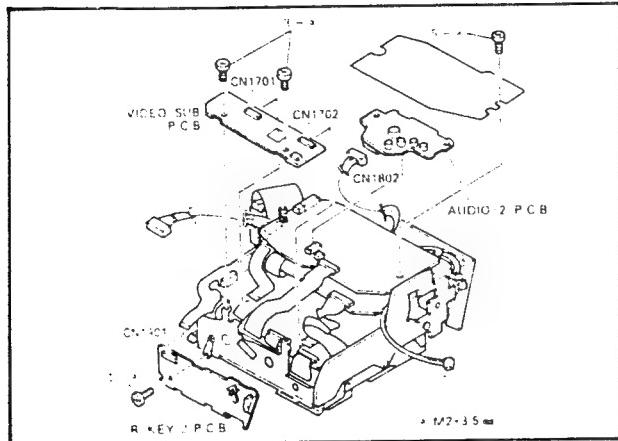


Fig. III-16

1-3-2 Removal of AUDIO-1 P.C.B.

- (1) Unplug the CN905 and 906, and remove the screw (a).
- (2) Remove the AUDIO-1 P.C.B. by unplugging the CN208 and 1402.
- (3) Remove the VIDEO-Shield plate 1 by removing the screw (a).

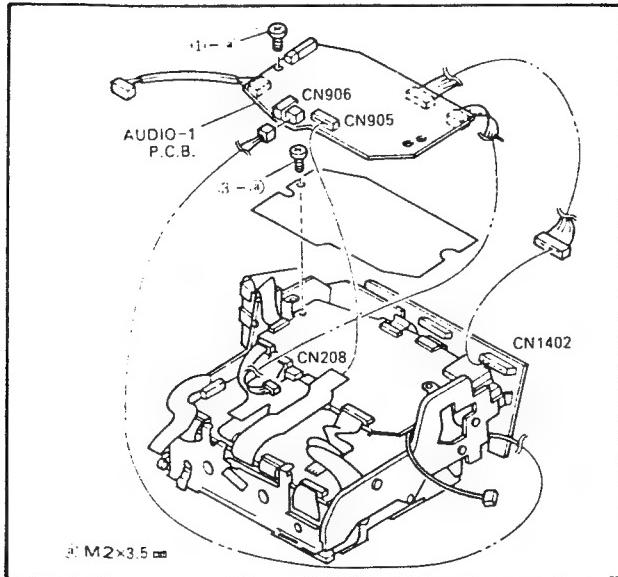


Fig. III-17

1-3-3 Removal of VIDEO, TERMINAL and R-KEY 1 P.C.B.s

- (1) Unplug the CNs 201, 202, 204, 205 and 206.
- (2) Remove the screw (a).
- (3) Remove the VIDEO P.C.B.
- (4) Unplug the CN1609 and 1610, and remove two screws (a).
- (5) Remove the TERMINAL P.C.B.
- (6) Remove the R-KEY 1 P.C.B. by unplugging the CN1607.

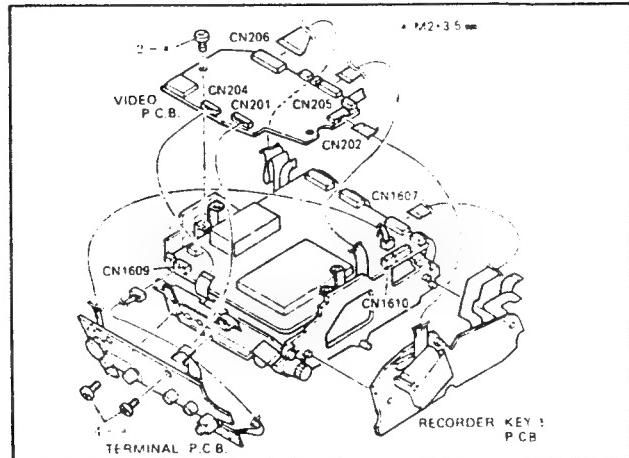


Fig. III-18

1-3-4 Removal of Recorder Holders (1), (2) and HEADPHONE P.C.B.

- (1) Remove three screws (a).
- (2) Dismount the Recorder Holder (1).
- (3) Peel off the tape, and remove two screws (a).
- (4) Remove the Recorder Holder (2).
- (5) Remove the HEADPHONE P.C.B. by removing two screws (b).
- (6) Unplug the CN100 and 1601.
- (7) Remove the capstan connector by unplugging the CN101.

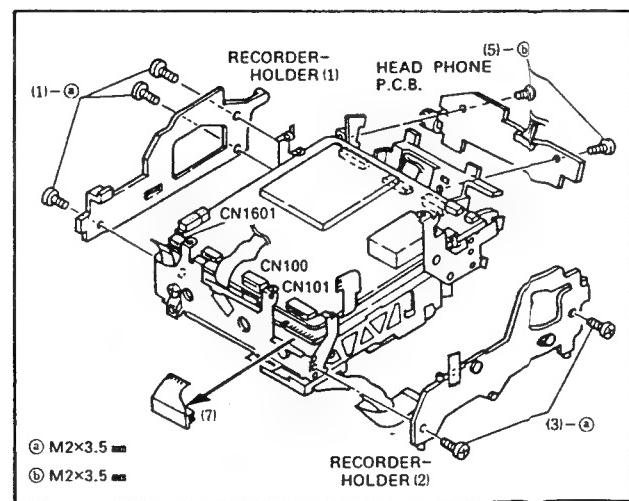


Fig. III-19

**1-3-5 Removal of SYSCON-SERVO P.C.B. and
Recorder Holders (3), (4)**

- (1) Remove two screws (a) and one screw (b).
- (2) Dismount the Recorder Holder (3).
- (3) Remove the SYSCON-SERVO P.C.B. by unplugging the CNs 1606 and 1608.
- (4) Remove two screws (b).
- (5) Remove the Recorder Holder (4).
- (6) Remove the flexible connectors of drum and the loading motor.

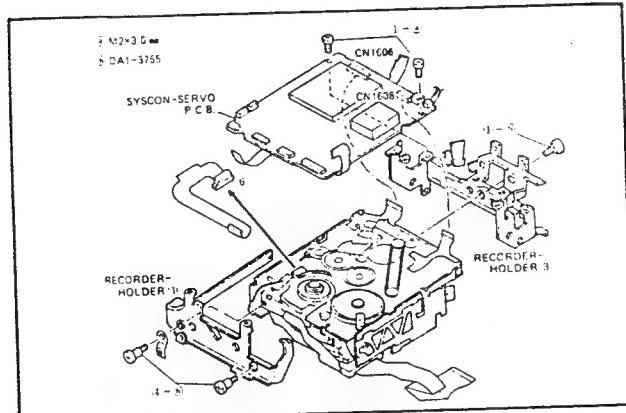


Fig. III-20

1-4 Wiring

(1) Camera and recorder units

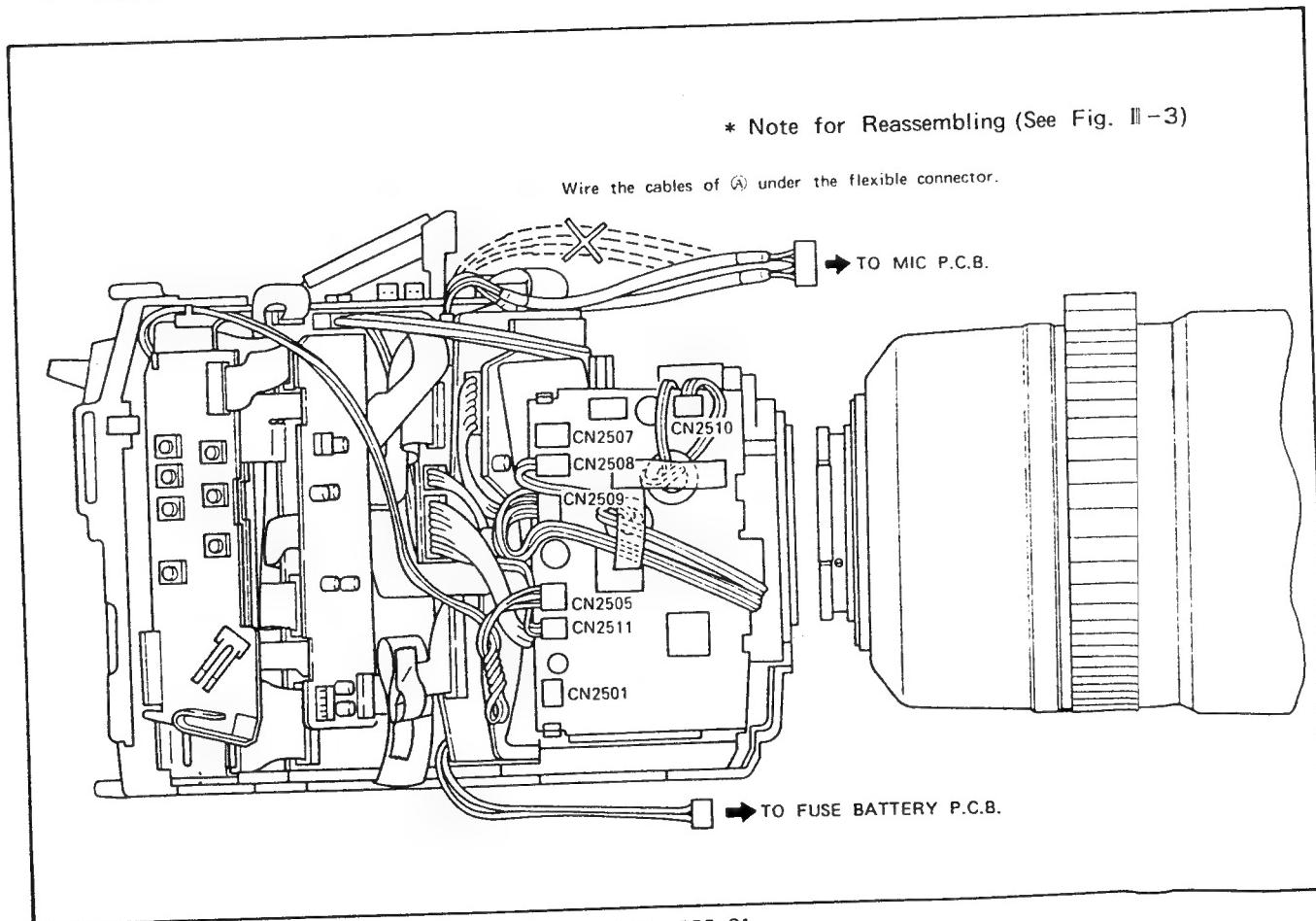


Fig. III-21

(2) Recorder unit only

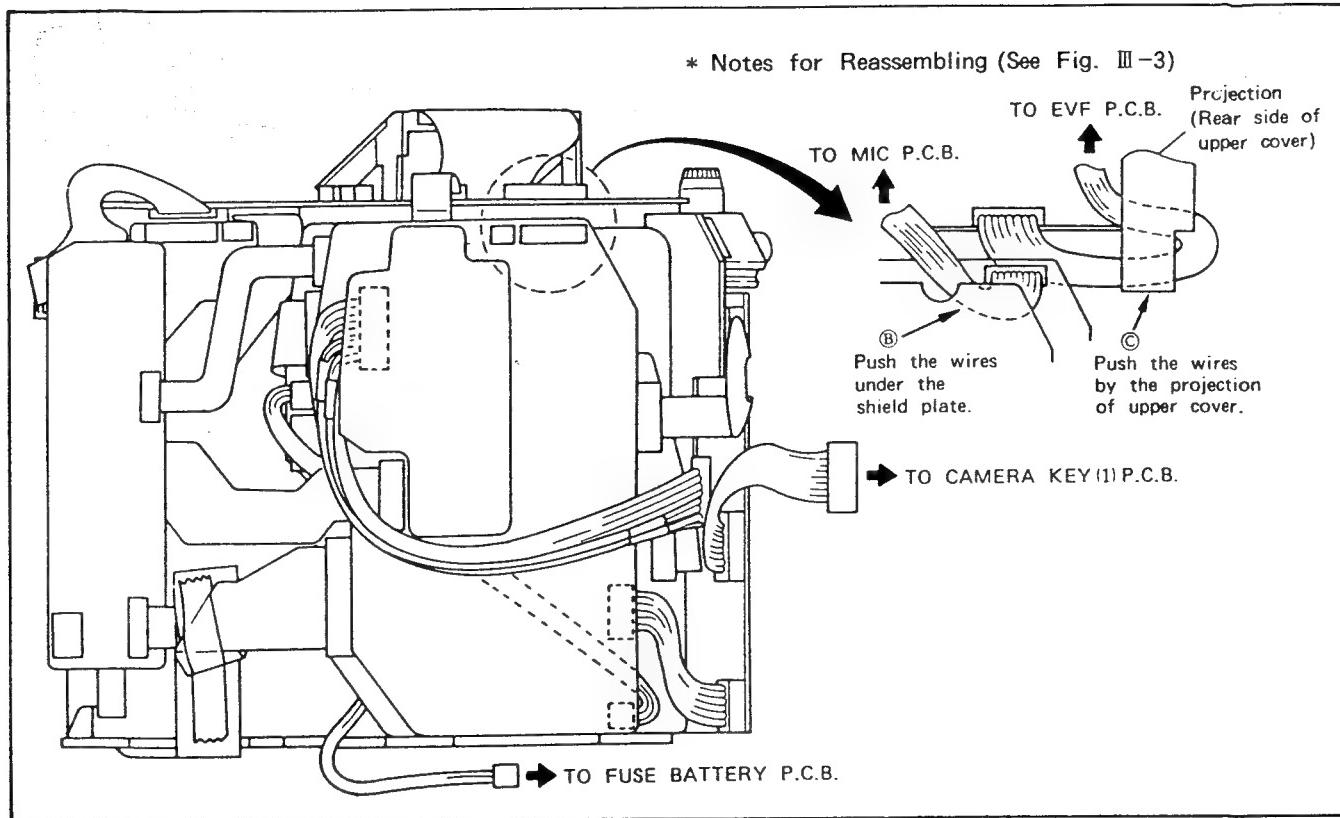


Fig. III-22

(3) SYSCON-SERVO P.C.B.

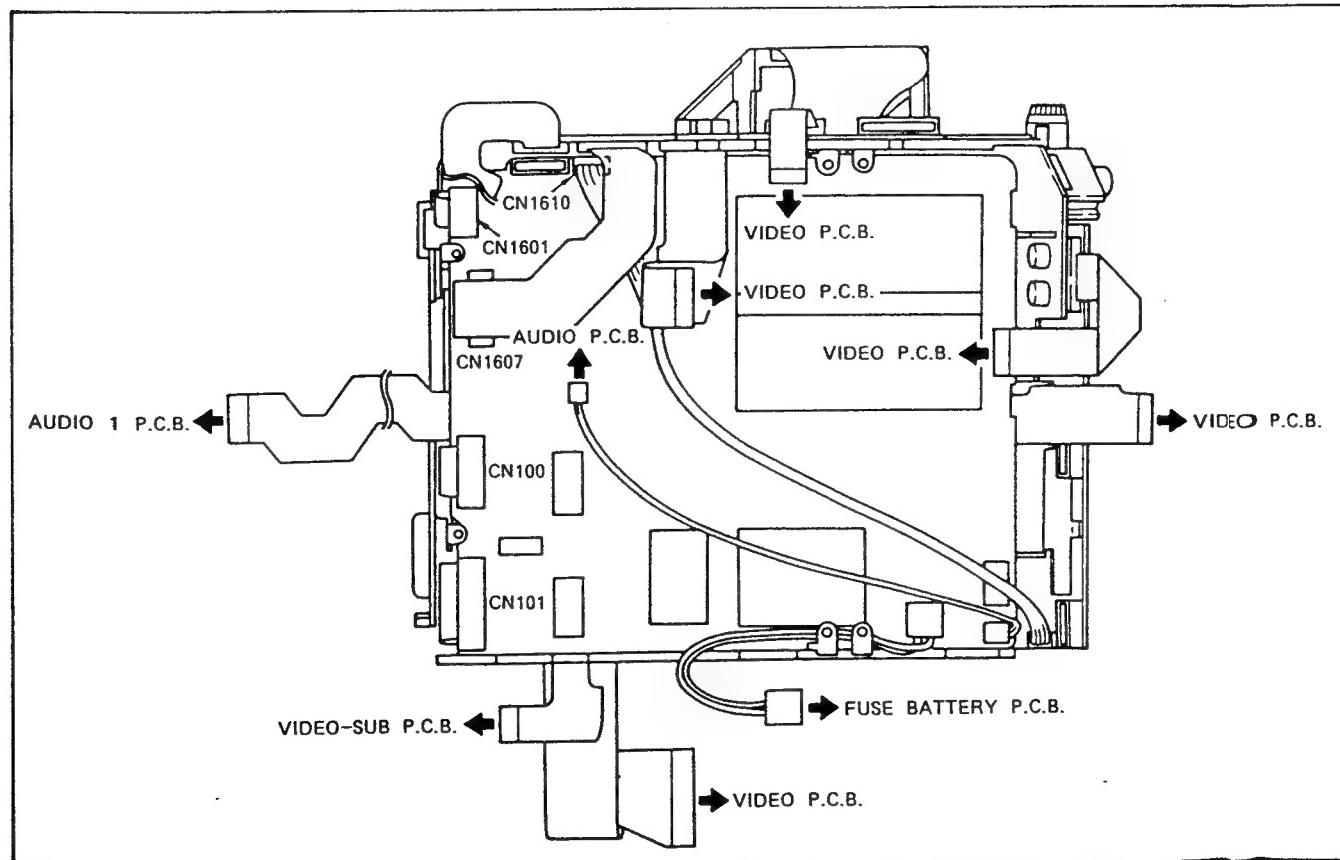


Fig. III-23

2. Lens Adjustment

2-1 Flange back adjustment

The L1A equips the interchangeable lens.

To function the lens properly, the distance from the mount part of interchangeable lens to the CCD must be adjusted as follows.

CHART	Siemens chart
MODE	Manual Focus
M. EQ.	Monitor TV
TOOL	Character generator (DY9-1115-000)
ADJ.	Adjuster ring
SPEC.	No defocusing found under the conditions below. Distance : $3\text{ m} \pm 1\text{ cm}$ (Lens front \leftrightarrow Chart) Focus ring: 3 m position.

* Note: Be sure to use a 15x lens which is adjusted properly.

Procedures:

- (1) Attach the 15x lens to the main unit as shown in the Fig. III-24.
- (2) Remove the adhesive on the adjuster ring.
- (3) While observing the siemens chart on the monitor TV, turn the focusing ring with a tweezers and stop at the best focused position.
Also, at this time, check the displayed number of ES value. (See 2-1-3 for connection. Page II-4)
- (4) Fix the adjuster ring with the adhesive (DY9-3008-000).

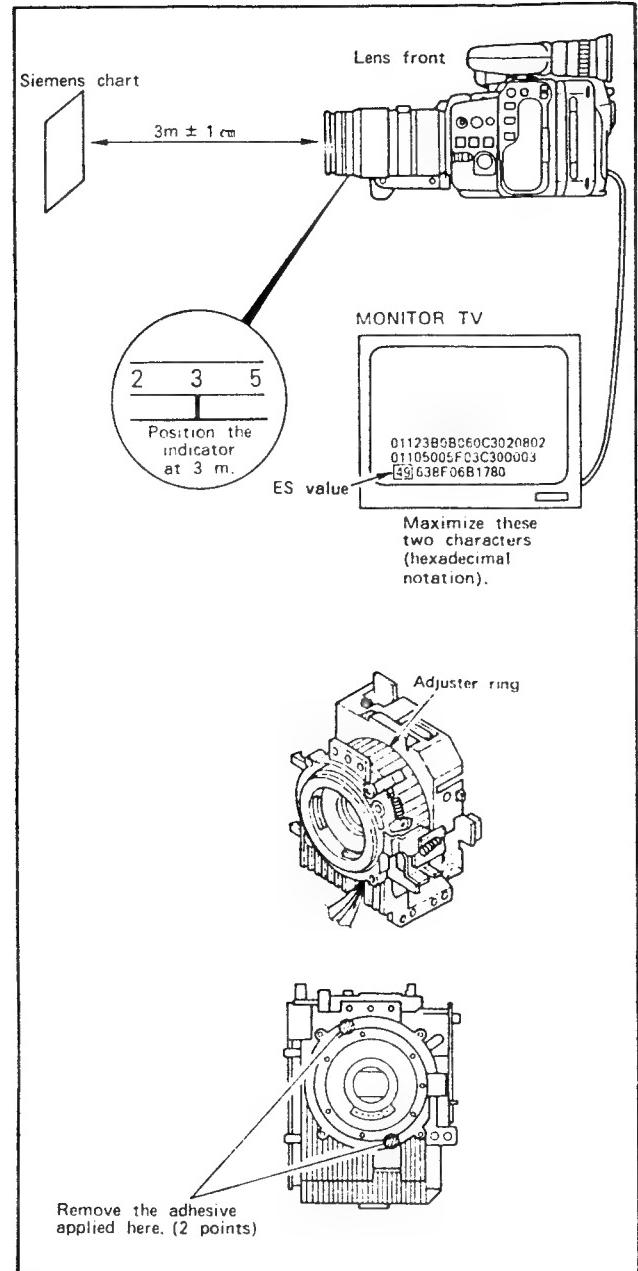


Fig. III-24

2-2 AF adjustment

2-2-1 Clock adjustment

MODE	AF
M. EQ.	Oscilloscope
TP/TRIG.	AF P.C.B. TP2508 (AF FRAME)/ TP2506 (HD)
ADJ.	AF P.C.B. VC2501 (CLOCK)
SPEC.	26 ± 0.5 μs

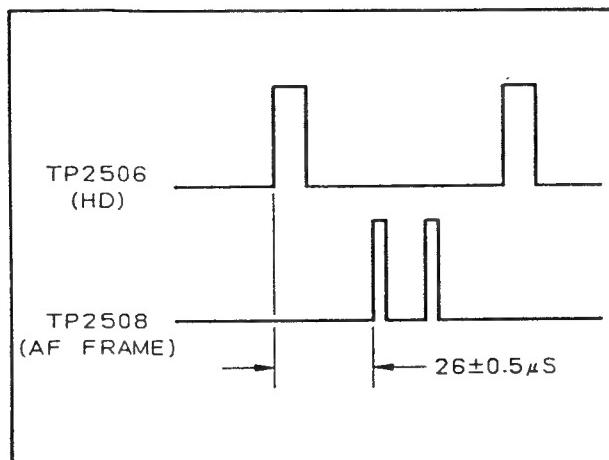


Fig. III-25 10 μs/0.2 V

2-2-2 ES offset adjustment

CHART	Lens capped
MODE	AF, AE lock
M. EQ.	Digital voltmeter
TP/TRIG.	AF P.C.B. TP2502 (+1.8 V) TP2503 (DIV. OUT)
ADJ.	AF P.C.B. VR2501 (OFFSET)
SPEC.	0 ± 10 mV

Procedures:

- (1) Shoot a grayscale chart. Then, lock the AE.
- (2) Cap the lens.
- (3) Connect a digital voltmeter as follows, and perform the adjustment.
TP2503: Adjustment side
TP2502: GND side

2-2-3 Piezo drive adjustment

MODE	Manual Focus
M. EQ.	Oscilloscope
TP/TRIG.	AF P.C.B. TP2522 (PIEZO)
ADJ.	AF P.C.B. VR2502 (PIEZO)
SPEC.	14.4 ± 0.5 V

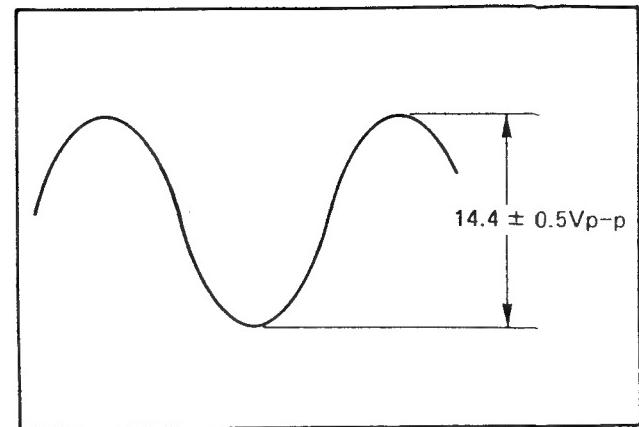


Fig. III-26 10 ms/0.5 V

2-2-4 ES threshold level adjustment

CHART	GRAY/WHITE chart (DY9-2045-000)
MODE	Manual Focus
TOOL	Character generator (DY9-1115-000)
M. EQ.	Monitor TV
ADJ.	AF P.C.B. VR2503 (ES THRESH)
SPEC.	13 (decimal) deducted value from the ES value (hexadecimal) in best-focused. (+1 H)

Procedures:

- (1) Connect the character generator. (Refer to 2-1-3. Page II-4)
- (2) Shoot the GRAY/WHITE chart at telephoto end. Then, set the best-focused condition by manual focusing. (ES value = Max.)
- (3) Adjust the VR2503 so that the ES threshold value is smaller than the above value by 13.

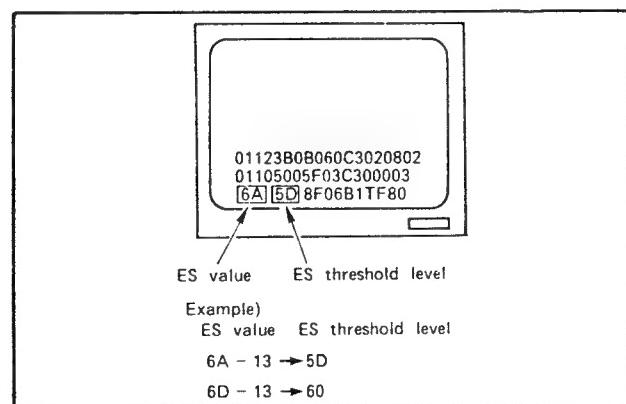


Fig. III-27

3. Electrical Adjustments of Camera Section

* Note: For adjustments from 3-6 through 3-13, set the PRESET mode. To set it, connect the following test points.

CN2308 Pin 1 (TEST 1) ↔ Pin 6 (GND)

Use DY9-1184-000 for extending connection.

3-1 Clock frequency adjustment

M. EQ.	Frequency counter Connect via an oscilloscope.
TP/TRIG.	PRO 2 P.C.B. CN2308 Pin 7 (CLOCK)
ADJ.	PRO 1 P.C.B. VC2101 (CLOCK)
SPEC.	7.093750 MHz \pm 15 Hz

3-2 PLL adjustment

M. EQ.	Digital voltmeter
TP/TRIG.	PRO 2 P.C.B. CN2308 Pin 10 (PLL)
ADJ.	PRO 1 P.C.B. VC2102 (PLL)
SPEC.	2.5 \pm 0.1 V

3-3 Gate positioning adjustment (for 24-section system)

M. EQ.	Oscilloscope
TP/TRIG.	PRO 2 P.C.B. CN2308 Pin 4 (GATE 24) Pin 5 (ID)
ADJ.	PRO 1 P.C.B. VC2103 (GATE POSITION)
SPEC.	12 \pm 0.5 μ s

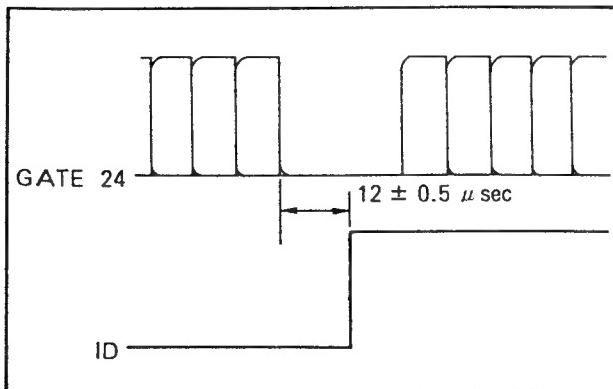


Fig. III-28

3-4 V SUB adjustment

M. EQ.	Digital voltmeter
TP/TRIG.	PRO 2 P.C.B. CN2308 Pin 9 (V SUB)
ADJ.	PRO 2 P.C.B. VR2315 (V SUB)
SPEC.	Set the DC voltage to the indicated value (CCD) in Fig. III-29. \pm 0.1 V

3-5 V RGL adjustment

M. EQ.	Oscilloscope
TP/TRIG.	PRO 2 P.C.B. CN2308 Pin 8 (RG)
ADJ.	PRO 2 P.C.B. VR2316 (V RGL)
SPEC.	Set the DC voltage to the indicated value (CCD) in Fig. III-29. \pm 0.1 V

3-6 Auto iris adjustment

CHART	Grayscale (5600°K)
MODE	PRESET (CN2308 Pin 1 ↔ Pin 6)
M. EQ.	Oscilloscope
TP/TRIG.	AF P.C.B. TP2521 (YS) PRO 2 P.C.B. CN2308 Pin 5 (ID)
ADJ.	PRO 2 P.C.B. VR2301 (IRIS)
SPEC.	280 \pm 10 mV

* Note: After the adjustment, confirm that the rating is obtained even when the lens is capped. (Cover the lens front with your palm.)

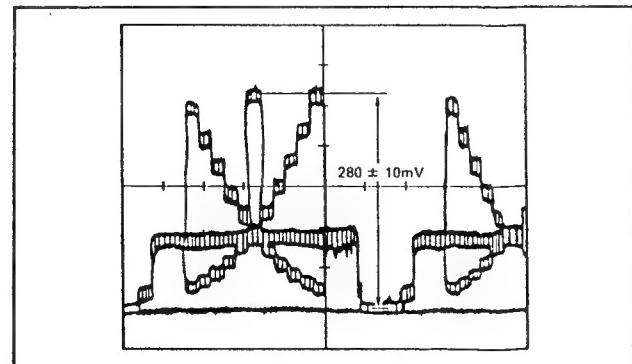


Fig. III-30

10 ms/0.5 V

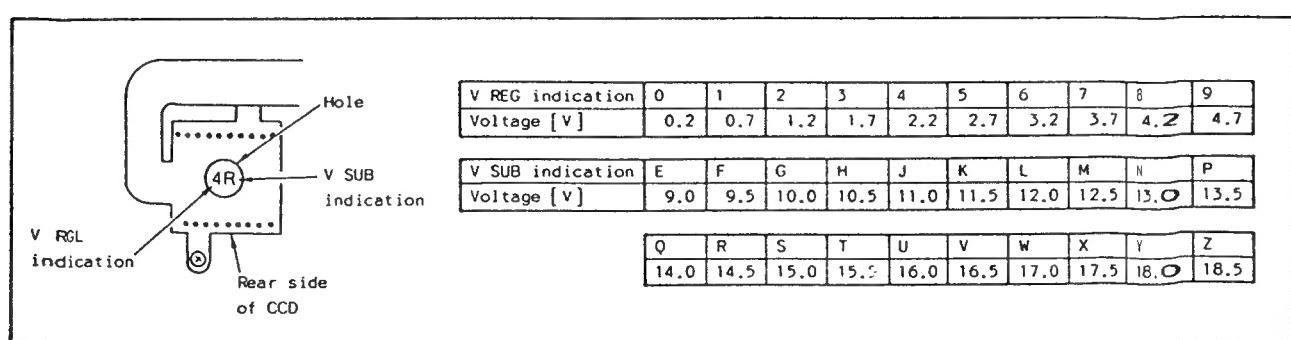


Fig. III-29

3-7 Y AGC adjustment

CHART	Grayscale (5600°K)
MODE	PRESET (CN2308 Pin 1 ↔ Pin 6)
M. EQ.	Oscilloscope
TP/TRIG.	PRO 2 P.C.B. CN2308 Pin 11 (Y AGC) / Pin 5 (ID)
ADJ.	PRO 2 P.C.B. VR2302 (AGC)
SPEC.	200 ± 10 mV

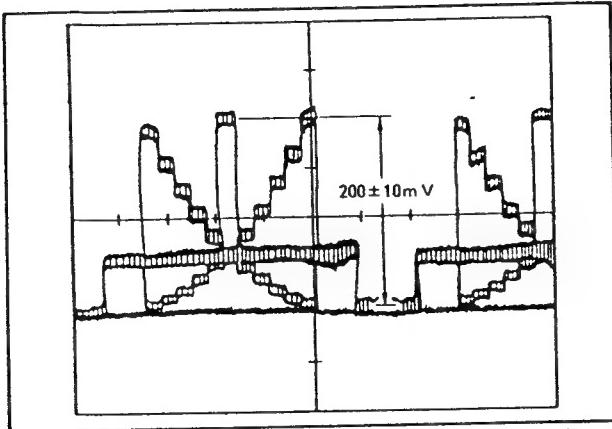


Fig. III-31 10 μ s/5 mV

3-8 Y LEVEL adjustment

CHART	Grayscale (5600°K)
MODE	PRESET (CN2308 Pin 1 ↔ Pin 6)
M. EQ.	Oscilloscope
TP/TRIG.	PRO 2 P.C.B. CN2307 Pin 3 (Y OUT) /
ADJ.	PRO 2 P.C.B. VR2314 (Y LEVEL)
SPEC.	660 ± 40 mV

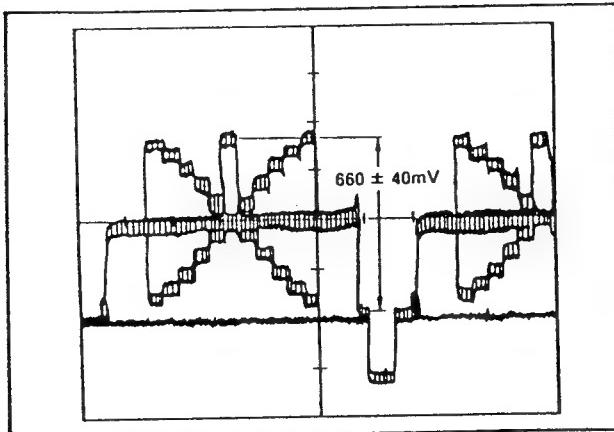


Fig. III-32 10 μ s/20 mV

3-9 C LEVEL adjustment

CHART	Grayscale (5600°K)
MODE	PRESET (CN2308 Pin 1 ↔ Pin 6)
OFFSET	OFFSET (CN2308 Pin 14 ↔ pin 6)
M. EQ.	Oscilloscope
TP/TRIG.	PRO 2 P.C.B. CN2308 Pin 13 (G OUT) /
ADJ.	PRO 2 P.C.B. VR2313 (C LEVEL)
SPEC.	350 ± 20 mV

* Note: Be sure to set the OFFSET mode.

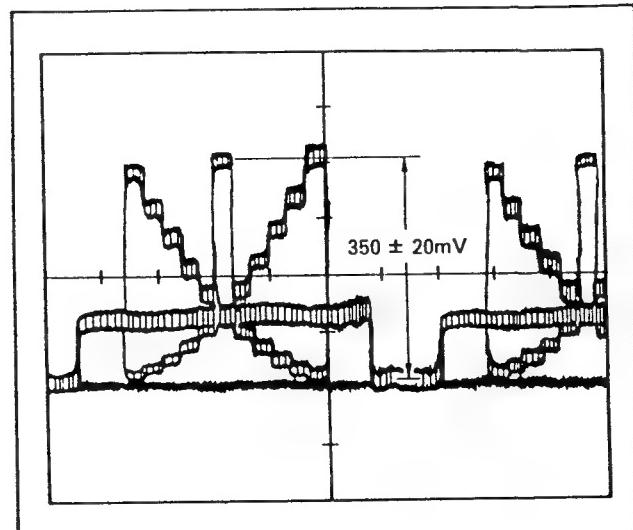


Fig. III-33 10 μ s/10 mV

3-10 C2H LEVEL adjustment

CHART	Color bar (5600°K)
MODE	PRESET (CN2308 Pin 1 ↔ Pin 6)
M. EQ.	Vectorscope
ADJ.	PRO 2 P.C.B. VR2318 (C2 GAIN)
SPEC.	Each bright dots to be together Dot split tolerance: Phase; 5° Gain ; 10%

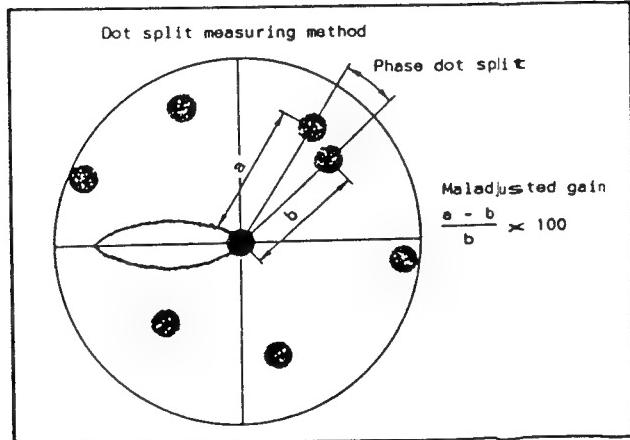


Fig. III-34

3-11 Carrier balance adjustment

CHART	Color bar (5600°K)
MODE	PRESET (CN2308, Pin 1 ↔ Pin 6)
M. EQ.	Vectorscope
ADJ.	PRO 2 P.C.B. VR2305 (R CB)/ VR2306 (B CB)
SPEC.	Set the bright dot (in dark portion) to the center

* Note: Turn the zoom ring to the wide angle side from a standard angle of view, and set the angle as shown in the Fig. III-35.

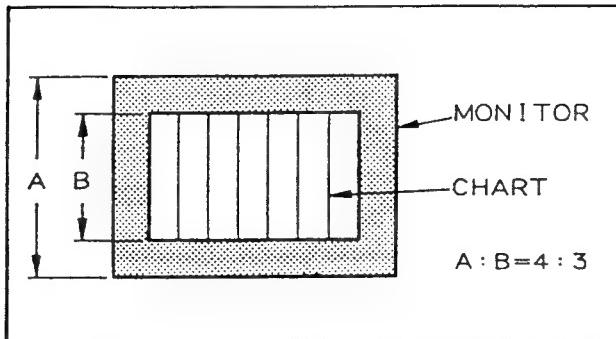


Fig. III-35

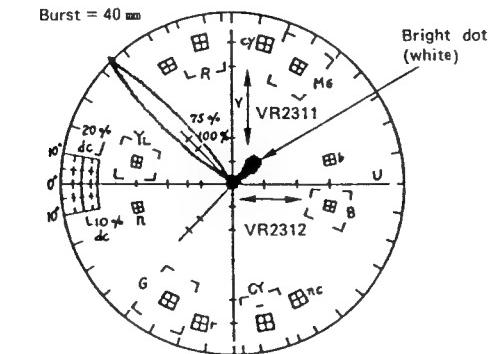


Fig. III-37

3-13 Color balance adjustment

CHART	Color bar (5600°K)
MODE	PRESET (CN2308, Pin 1 ↔ Pin 6)
M. EQ.	Vectorscope
ADJ.	PRO 2 P.C.B. VR2307 (B-Y HUE) VR2308 (R-Y HUE) VR2309 (B-Y GAIN) VR2310 (R-Y GAIN)
SPEC.	Color phase Gain (against burst) R $98 \pm 2^\circ$ 2.5 ± 0.1 times Ye 160 ± 2° 1.6 ± 0.1 times G 244 ± 8°

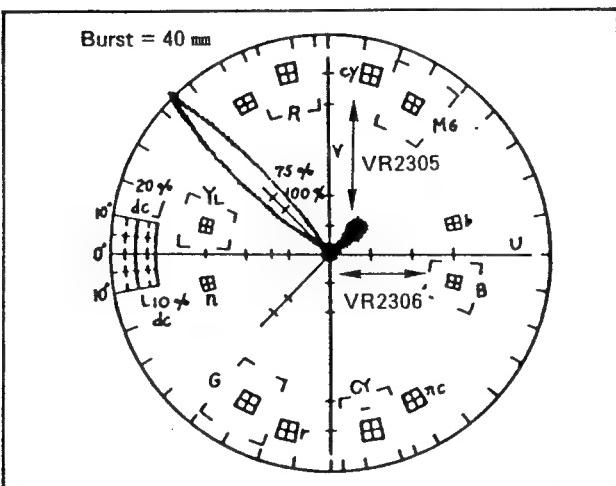


Fig. III-36

3-12 R/B GAIN adjustment

CHART	Color bar (5600°K)
MODE	PRESET (CN2308, Pin 1 ↔ Pin 6)
M. EQ.	Vectorscope
ADJ.	PRO 2 P.C.B. VR2311 (R GAIN) VR2312 (B GAIN)
SPEC.	Set the bright dot (white) to the center.

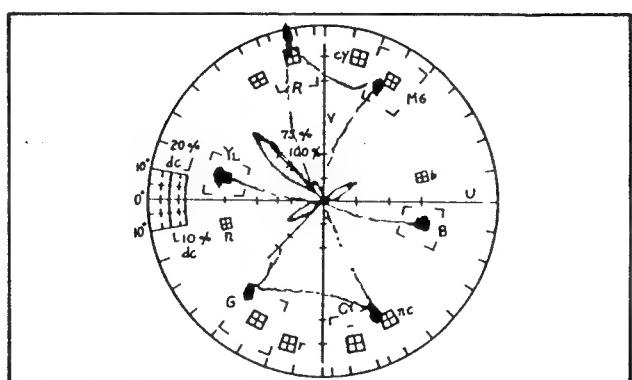


Fig. III-38

3-14 FAWB adjustment

CHART	White chart (5600°K, halogen light)
MODE	FAWB adjustment mode
M. EQ.	Vectorscope
TOOL	Halogen light 3200°K, CCB4 filter
TP/TRIG.	CAMERA (2) P.C.B. TP2801 (ADJ)
ADJ.	KEY

* Note: By manipulating the step shift dial, arbitrary step can be performed as you desired.

Procedures:

- (1) Set the equipments as shown in the Fig. II-2.
- (2) Connect the TP2801 to ground to set the FAWB adjustment mode.
- (3) Perform the adjustment (Auto or Manual)

3-14-1 FAWB (Full Auto White Balance) auto adjustment

- (1) Confirm each step on the display. At "COMPLETE" state, the bright dots should be positioned on the center of vectorscope.
- (2) If any mistake is made during each step, retry from the beginning of relevant step. For this purpose, terminate the relevant step prematurely and go back to its beginning.

Table III-1 (1/2)

STEPS		PROCEDURES	DISPLAY
STEP 1	1-0	1. Ground TP2801 (ADJ).	STEP 1 LENS CAP START?
	1-1	1. Shoot the white chart for 6 sec. or more. Then, push the EXP. A/M button for AE lock. 2. Check that "1" indication flashing on the LED lights up steadily. 3. Cap the lens.	STEP 1 LENS CAP
	1-2	1. Push the AF MACRO/PUSH AF button. 2. After 1 sec. (approx.), the indication on the right column appears.	WORKING ... OK WRITE?
	1-3	1. Push the AF MACRO/PUSH AF button. 2. After 0.5 sec. (approx.), the indication on the right column appears. * Note: If the bright dots are not gathered on the center of vectorscope, perform the carrier balance adjustment (5-10).	COMPLETE
STEP 2	2-1	1. Turn the EXPOSURE CONTROLLER clockwise to set the STEP 2. 2. Shoot the white chart (3200°K) for 6 sec. or more.	STEP 2 3200K START?
	2-2, 3	1. Same as 1-2, 1-3 of STEP 1.	(Same as STEP 1)
STEP 3	3-1	1. Turn the EXPOSURE CONTROLLER clockwise to set the STEP 3. 2. Shoot the white chart (5600°K) for 6 sec. or more.	STEP 3 5600K START?
	3-2, 3	1. Same as 1-2, 1-3 of STEP 1.	(Same as STEP 1)
STEP 4	4-1	1. Turn the EXPOSURE CONTROLLER clockwise to set the STEP 4. 2. Shoot the white chart (5600°K + CCB4) for 6 sec. or more.	STEP 4 5600K + B4 START?
	4-2, 3	1. Same as 1-2, 1-3 of STEP 1.	(Same as STEP 1)

* Note: DISPLAY (Refer to Fig. II-5.)

Table III-1 (2/2)

STEPS		PROCEDURES	DISPLAY
Defective unit (n = step No.)	n-2	<p>1. If the indication on the right column appears even after the step n-2 of each step, check the FAWB control signal loop.</p> <p>* Note: If the right indication still appears, check the type of filter.</p>	WORKING ... NG TRY AGAIN?
	n-3	<p>1. If the indication on the right column appears, perform the n-1 again.</p> <p>If it still appears, check the IC2311 (E^2 PROM).</p>	WORKING ...

3-14-2 FAWB (Full Auto White Balance) manual adjustment

- (1) Confirm each step on the display. At "COMPLETE" state, the bright dots should be positioned on the place indicated at each step.
- (2) If any misoperation is made during a step, try it again from the beginning of relevant step.

Table III-2 (1/2)

STEPS		PROCEDURES	DISPLAY
STEP 1	1-0	<p>1. Remove R2412. Then, connect pin 34 of IC2304 to +5 V.</p> <p>2. Ground TP2801 (ADJ).</p>	STEP 1 LENS CAP START?
	1-1	<p>1. Shoot the white chart for 6 sec. or more. Then, push the EXP. A/W button for AE lock.</p> <p>2. Check that "1" indication flashing on the LED lights up steadily.</p> <p>3. Cap the lens.</p>	STEP 1 LENS CAP
	1-2	<p>1. Push the AF MACRO/PUSH AF button.</p> <p>2. After 1 sec. (approx.), the indication on the right column appears.</p>	WORKING ... OK WRITE?
	1-3	<p>1. Push the AF MACRO/PUSH AF button.</p> <p>2. After 0.5 sec. (approx.), the indication on the right column appears.</p> <p>* Note: If the bright dots are not gathered on the center of vectorscope, perform the carrier balance adjustment (5-10).</p>	COMPLETE

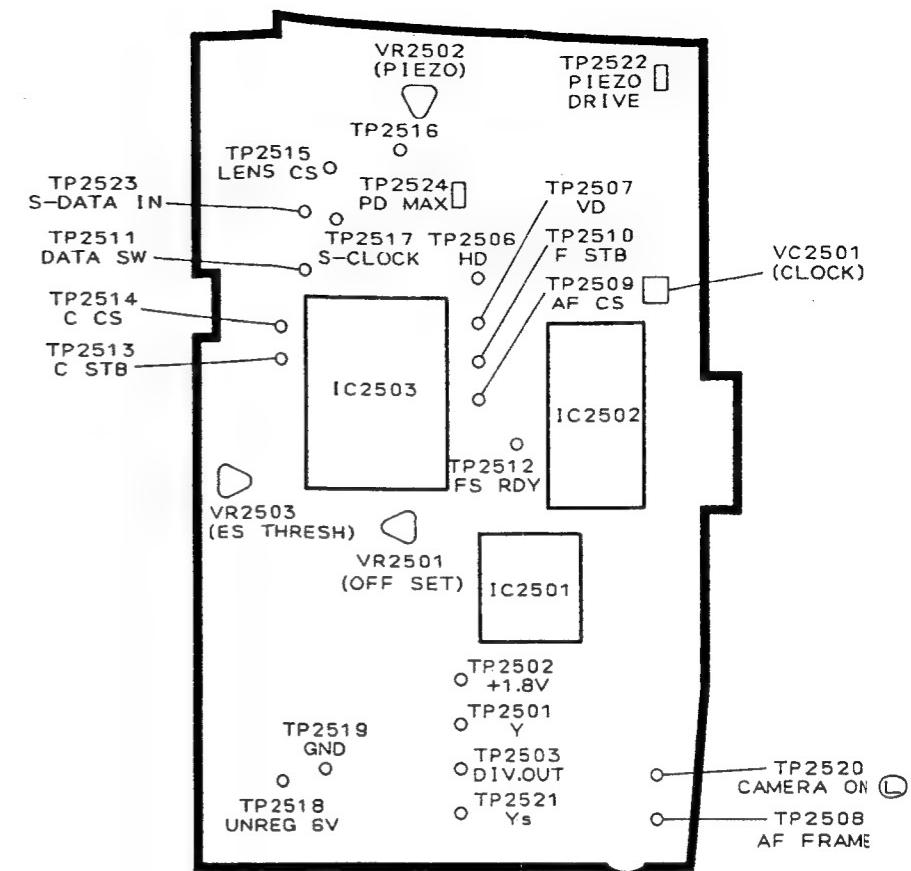
* Note: DISPLAY (Refer to Fig. II-5.)

Table III-2 (2/2)

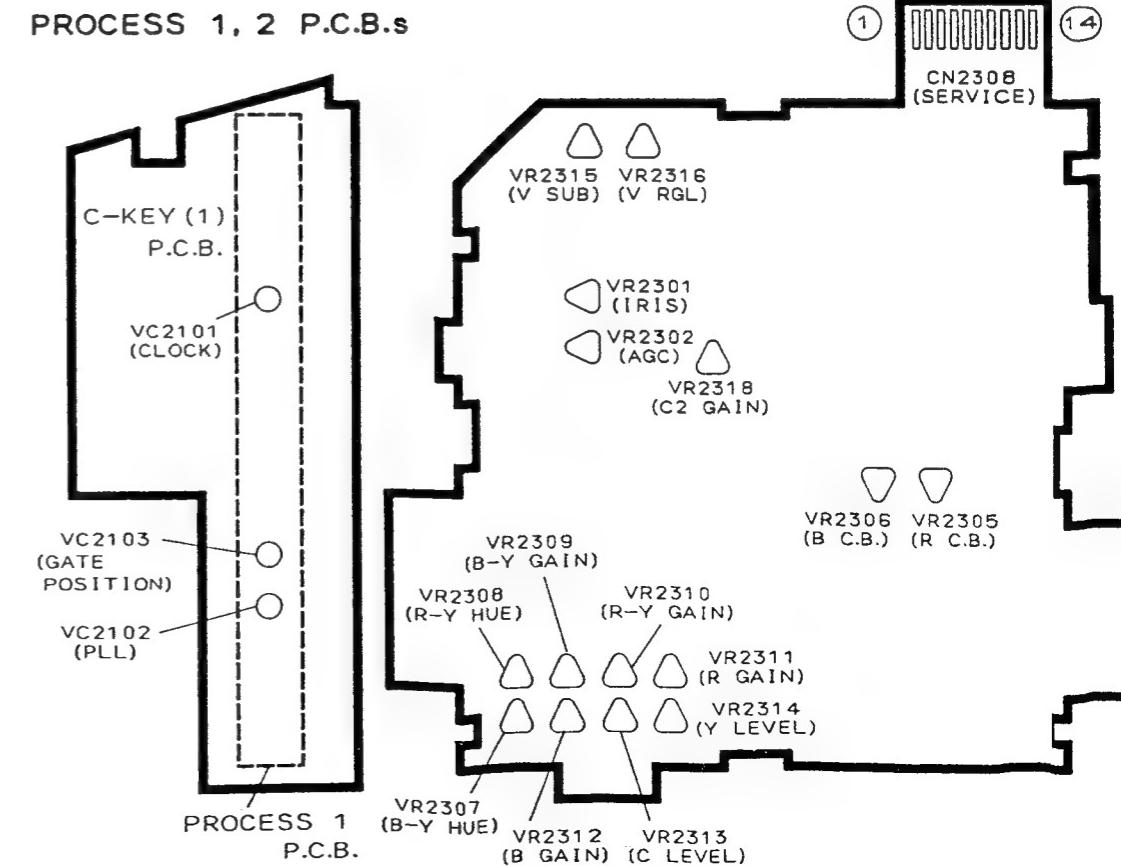
STEPS		PROCEDURES	DISPLAY
STEP 2	2-1	1. Turn the EXPOSURE CONTROLLER clockwise to set the STEP 2. 2. Shoot the white chart (3200°K) for 6 sec. or more.	STEP 2 3200K START?
	2-2	1. Push the AF MACRO/PUSH AF button. 2. After 1 sec. (approx.), the indication on the right column appears. 3. Check the position of bright dots by REC SEARCH and TITLE/DATE buttons. (R-Y)	OK WRITE?
	2-3	1. Push the AF MACRO/PUSH AF button. 2. After 0.5 sec. (approx.), the indication on the right column appears.	COMPLETE
STEP 3	3-1	1. Turn the EXPOSURE CONTROLLER clockwise to set the STEP 3. 2. Shoot the white chart (5600°K) for 6 sec. or more.	STEP 3 5600K START?
	3-2, 3	1. Same as 2-2, 2-3 of STEP 2.	(Same as STEP 2)
STEP 4	4-1	1. Turn the EXPOSURE CONTROLLER clockwise to set the STEP 4. 2. Shoot the white chart (5600°K + CCB4) for 6 sec. or more.	STEP 4 5600K + B4 START?
	4-2, 3	1. Same as 2-2, 2-3 of STEP 2.	(Same as STEP 2)
Defective unit (n = step No.)	n-2	1. If the indication on the right column appears even after the step n-2 of each step, check the FAWB control signal loop. * Note: If the right indication still appears, check the type of filter.	WORKING ... NG TRY AGAIN?
	n-3	1. If the indication on the right column appears, perform the n-1 again. If it still appears, check the IC2311 (E^2 PROM).	WORKING ...

Locations of TP/VR, VC

AF P.C.B.



PROCESS 1, 2 P.C.B.s



4. Electrical Adjustments (Recorder/EVF Section)

4-1 SS5V adjustment

MODE	EE
M. EQ.	Digital voltmeter
TP/TRIG.	SYS CON-SERVO P.C.B. IC1602 Pin 8
ADJ.	SYS CON-SERVO P.C.B. VR1601 (SS5V)
SPEC.	5.0 + 0.02 V

4-2 Undercut adjustment

MODE	REC (SERVICE MODE STEP 2)
M. EQ.	Digital voltmeter
TOOL	WL-600 (DY2-1294-000)
ADJ.	AUTO
SPEC.	5.65 + 0.05 V

Procedures:

- (1) Select the service mode 2.
- (2) Apply 5.65 + 0.05 V to the battery terminal.
- (3) Press the DSP CLEAR key (WL-600).
(The adjustment is done automatically, then "WR!" is displayed on monitor TV.)
- (4) Press the power off key.
(The voltage is written by the microcomputer as the reference voltage for detection of insufficient power voltage.)

4-3 Switching point adjustment

MODE	PB (SERVICE MODE STEP 5,6)
TOOL	Alignment tape (Tracking B with marker <WR5-1CP> DY9-1086-001) New! WL-600 (DY2-1294-000)
ADJ.	PGDLY0, PGDLY1
SPEC.	0 + 5 μ s

Procedures:

- (1) Select the service mode 5.
- (2) Play the alignment tape of new type <WR5-1CP>.
- * Note: You cannot use the old type (DY9-1086-000) as it has no marker part.
- (3) Observe the fall of switching point in delay mode.
- (4) Align the left edge of PB-RF marker part (unrecorded part in approx. 100 μ s) with the fall of switching point with + and - keys (R-KEY2).
- (5) Press the DSP CLEAR key (WL-600). ("WR!" is displayed on EVF.)
- (6) Select the service mode 6.
- (7) Set the same value adjusted in the service mode 5 with + and - keys (R-KEY2).
- (8) Press the DSP CLEAR key (WL-600). ("WR!" is displayed on EVF.)
- (9) Press the power off key.
(The adjustment data is written to the E²PROM by power off.)

Remarks: The service mode 6 is the adjustment for the rise of switching point. However, actually, you input the value of fall point here.

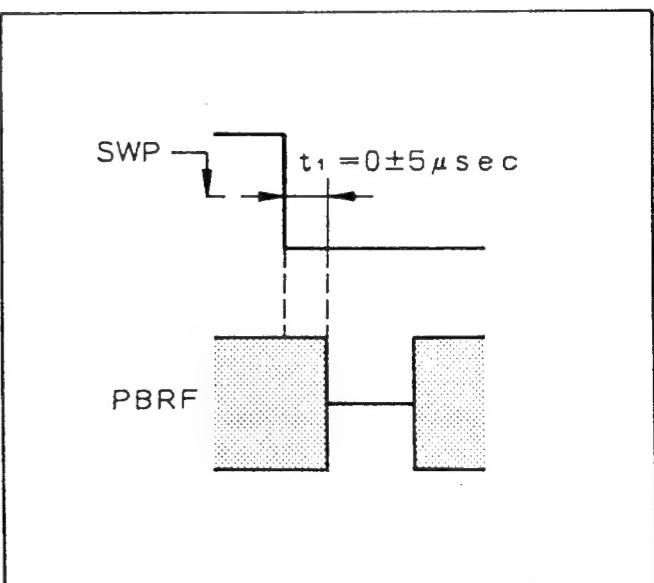


Fig. III-39

4-4 RCTC-PLL adjustment

MODE	PB IC1701 Pin 1 ↔ 6 (Short) Pin 9 ↔ 20 (Short)
M. EQ.	Digital voltmeter
TP/TRIG.	SYS CON-SERVO P.C.B. R1726(A)
ADJ.	SYS CON-SERVO P.C.B. VR1701 (RCTC PLL)
SPEC.	11.58 + 0.05 MHz

4-5 DSP Y OUT level adjustment

SIGNAL	100% white video signal, SC
MODE	REC (SERVICE MODE STEP 4)
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. CN204 Pin 1 (Y DSP OUT)
ADJ.	SYS/CON-SERVO P.C.B. VR1503 (DSP Y)
SPEC.	1.0 ± 0.05 V

* Note: Set the setting 4 condition.
(Refer to P.II-6.)

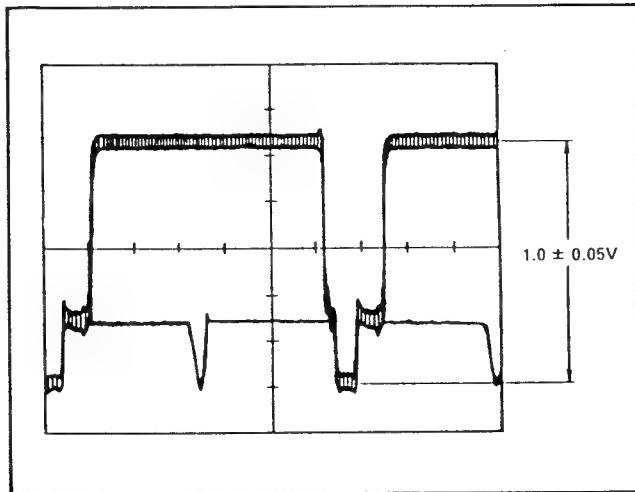


Fig. III-40 10 mV/10 μ s

4-6 DSP C OUT level adjustment

SIGNAL	Color bar signal, SC
MODE	REC (SERVICE MODE STEP 4)
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. CN204 7 pin (C DSP OUT)
ADJ.	SYS/CON-SERVO P.C.B. VR1504 (DSP C)
SPEC.	Maximize peak to peak

* Note: Set the setting 4 condition.
(Refer to P.II-6.)

4-7 VIDEO AGC adjustment

SIGNAL	100% white video signal
MODE	EE
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. TP214 (Y 1)
ADJ.	VIDEO P.C.B. VR203 (Y AGC)
SPEC.	500 ± 10 mV

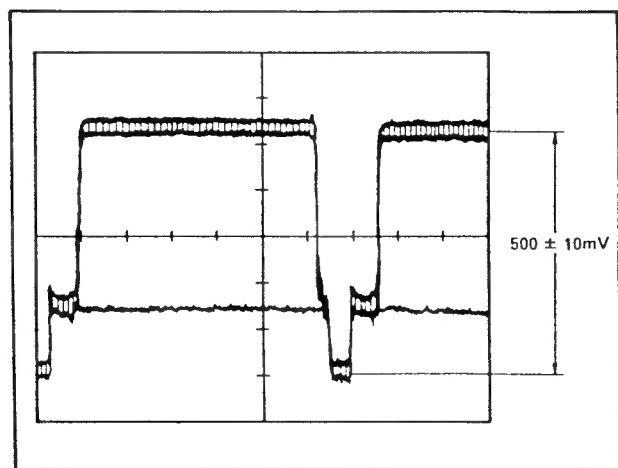


Fig. III-41

4-8 Comb filter adjustment

SIGNAL	Self-record/playback tape (HiME), color bar signal
MODE	PB
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. TP203 (COMB C)
ADJ.	VIDEO P.C.B. VR210 (2HDL PHASE) VR202 (2HDL LEV.)
SPEC.	Minimize chrominance component

Procedure:

- (1) To minimize the chrominance component at the TP203, adjust VRs 210 and 202 alternately.

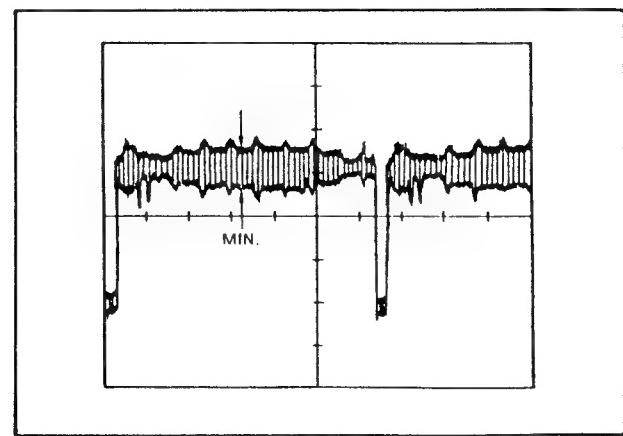


Fig. III-42 5 mV/10 μ s

4-9 Video level adjustment

SIGNAL	100% white video signal
MODE	EE
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. TP206 (Y2)
ADJ.	VIDEO P.C.B. VR309 (REC Y LEV.)
SPEC.	500 ± 10 mV

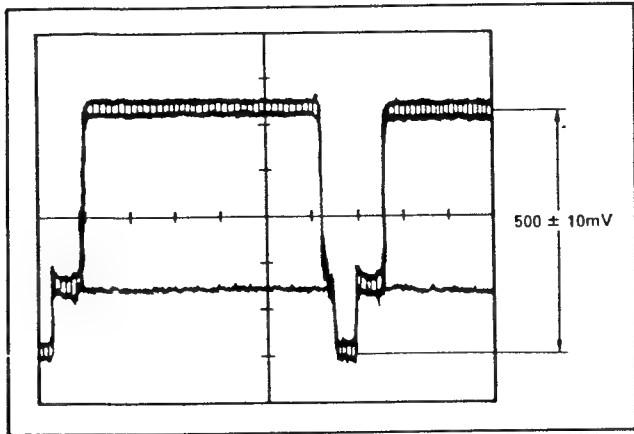


Fig. III-43 10 mV/10 μ s

4-10 Chrominance emphasis adjustment

SIGNAL	Color bar signal
MODE	EE
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. TP208 (C ENPHA)
ADJ.	VIDEO P.C.B. VL301 (C ENPHA)
SPEC.	Minimize yellow portion at its right end

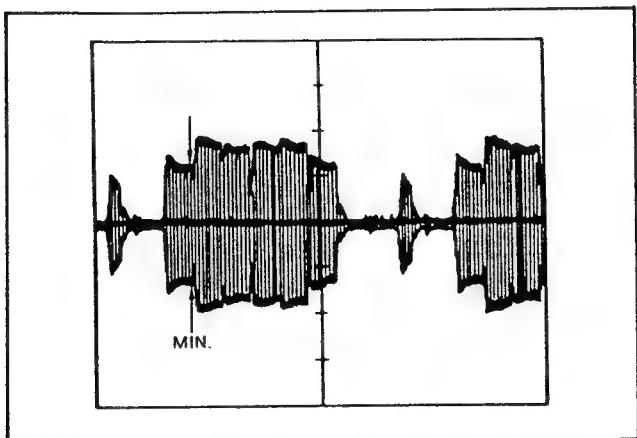


Fig. III-44 10 mV/10 μ s

4-11 Y FM carrier (normal) adjustment

* Note: Use a normal tape.

SIGNAL	No signal (Terminal-opened)
MODE	EE/NORMAL
M. EQ.	Oscilloscope, Frequency counter
TP/TRIG.	VIDEO P.C.B. CN206 pin 8 (REC RF)
ADJ.	VIDEO P.C.B. VR206 (N CAR)
SPEC.	4.38 ± 0.02 MHz

4-12 Y FM deviation (normal) adjustment

- * Notes: 1. Use a normal tape.
- 2. Observe the signal waveform having the shortest cycle.
- 3. After this adjustment, perform the 4-11 and 4-12 adjustments. Then, perform this adjustment again to check if the specified value is kept.

SIGNAL	100% white video signal
MODE	EE/NORMAL
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. CN206 pin 8 (REC RF)
ADJ.	VIDEO P.C.B. VR208 (N DEV)
SPEC.	0.19 μ s/1 cycle Graduation 3.8 at 50 ns Div.

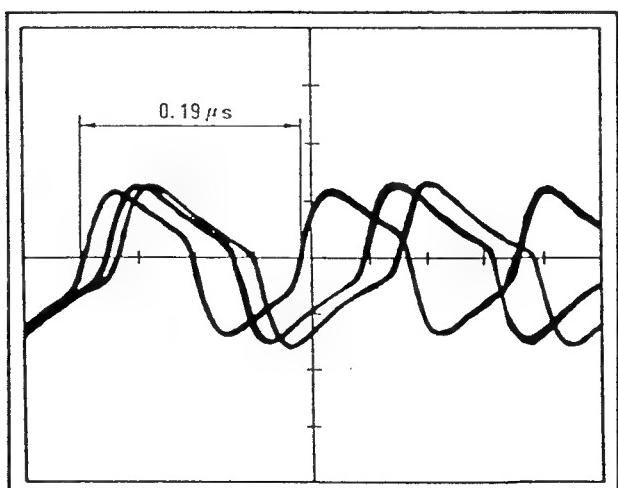


Fig. III-45 5 mV/50 ns

4-13 Y FM carrier (Hi8) adjustment

* Note: Use a Hi8 tape.

SIGNAL	No signal (Terminal-opened)
MODE	EE/Hi8
M. EQ.	Oscilloscope, Frequency counter
TP/TRIG.	VIDEO P.C.B. CN206 pin 8 (REC RF)
ADJ.	VIDEO P.C.B. VR204 (Hi8 CAR)
SPEC.	5.99 ± 0.02 MHz

4-14 Y FM deviation (Hi8) adjustment

- * Notes: 1. Use a normal tape.
- 2. Observe the signal waveform having the shortest cycle.
- 3. After this adjustment, perform the 4-13 and 4-14 adjustments. Then, perform this adjustment again to check if the specified value is kept.

SIGNAL	100% white video signal
MODE	REC/Hi8
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. CN206 pin 8 (REC RF)
ADJ.	VIDEO P.C.B. VR207 (Hi8 DEV.)
SPEC.	0.3975 μ s/3 cycles Graduation 7.95 at 50 ns

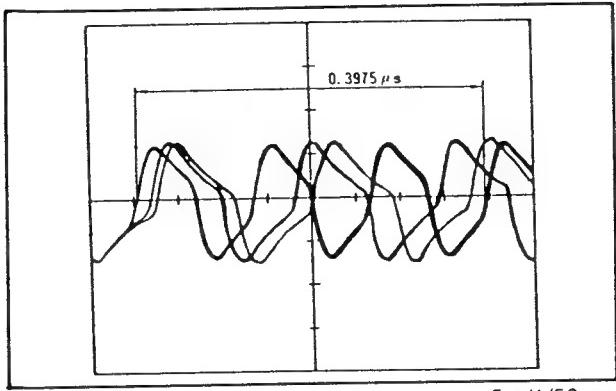


Fig. III-46 5 mV/50 ns

4-15 PB Y level adjustment (1)

SIGNAL	Self-record/playback tape (HiME), 100% white video signal
MODE	PB
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. TP202 (YO)
ADJ.	VIDEO P.C.B. VR306 (PB Y LEVE.1)
SPEC.	500 \pm 10 mV

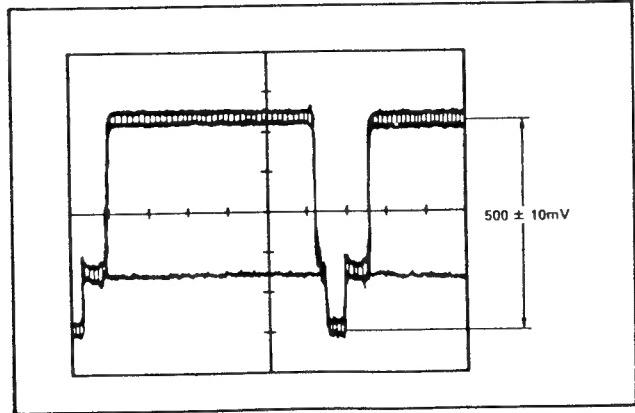


Fig. III-47 10 mV/10 ns

4-16 PB Y level adjustment (2)

SIGNAL	Self-record/playback tape (HiME), 100% white video signal
MODE	PB (S terminal-opened)
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO P.C.B. CN201 pin 1
ADJ.	VIDEO P.C.B. VR308 (PB Y LEV.2)
SPEC.	2.0 \pm 0.04 V

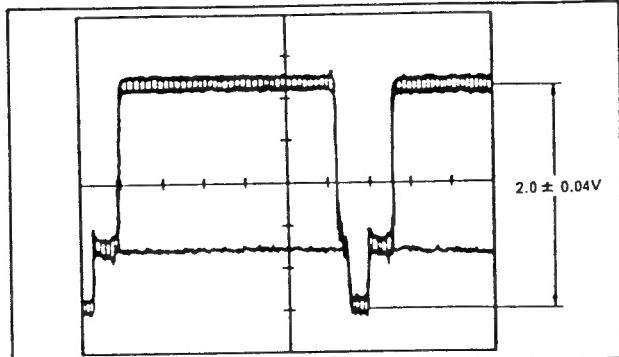


Fig. III-48 0.5 V/10 μ s

4-17 Character position of character adjustment

- * Note: Display characters by a wireless remote controller with an EVF connected.

SIGNAL	Color bar
MODE	EE
M. EQ.	Monitor TV
TP/TRIG.	VIDEO P.C.B. VC201 (CG SIZE)
SPEC.	Lowermost digit of counter located between blue and black color bars

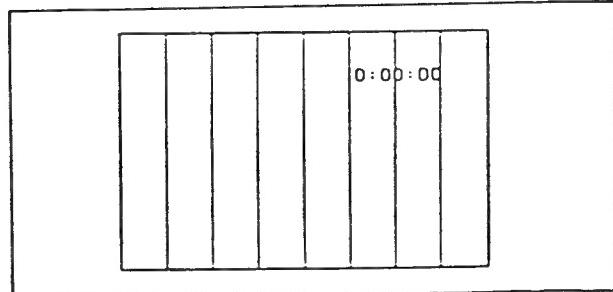


Fig. III-49

4-18 JOG chrominance phase adjustment

SIGNAL	Red signal (pattern generator)
MODE	Search
M. EQ.	Monitor
ADJ.	VR310 (JOG BURST)
SPEC.	Eliminate the black stripes

Procedures:

- (1) Record red signal in LP mode.
- (2) Playback and search the recorded part.
- (3) Eliminate the black stripes on the screen.

4-19 Peaking adjustment

* Note: Perform this adjustment only after replacing an upper drum assembly, drum assembly, or a HEAD AMP P.C.B.

SIGNAL	V sweep master (Hi8) (DY9-1111-500)
MODE	PB (SERVICE MODE STEP 4)
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO SUB P.C.B. CN1703-Pin 1 (PB/RF) Pin 3 (HSW)
ADJ.	HEAD AMP P.C.B. VR102 (CH-1), VR101 (CH-2), VR151 (CH-1')
SPEC.	4.5 MHz : 8.5 MHz = 3:2

Procedures:

- (1) Set the setting 3 condition.
- (2) Playback the V sweep master (Hi8).
- (3) Observing the waveform, trigger the PB RF signal with the HSW.
- (4) Observing the waveform of CH-1 (HSW, High period), adjust it by VR102 as specified.
- (5) Observing the waveform of CH-2 (HSW, Low period), adjust it by VR101 as specified.
- (6) Stop the tape, and set the step 4 of service mode.
- (7) Push the R. MODE SW to set the LP mode.
- (8) Perform the procedures (2) and (3).
- (9) Observing the waveform of CH-1' (HSW, LOW period), and adjust it by VR151 as specified.

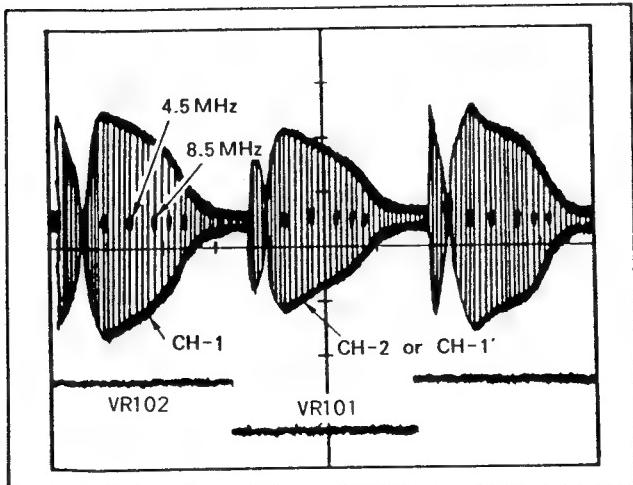


Fig. III-50

4-20 Recording current adjustment

(1) Luminance signal

SIGNAL	No signal (Terminal-opened)
MODE	REC/Hi8 ME tape
M. EQ.	Oscilloscope
TP/TRIG.	HEAD AMP P.C.B. TP101 (REC Curr)
ADJ.	VIDEO P.C.B. VR305 (REC Y)
SPEC.	200 ± 10 mVp-p

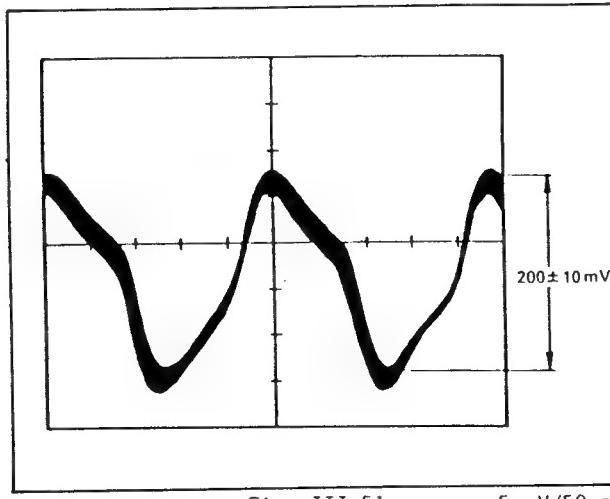


Fig. III-51 5 mV/50 ns

(2) Chrominance, Audio, ATF signals

MODE	REC/Hi8 ME tape
M. EQ.	Oscilloscope
TP/TRIG.	HEAD AMP P.C.B. TP101 (REC Curr)
TOOL	Recording current checker (DY9-1056-000)

* Note: Connect the TP101 with the recording current checker with a probe (1:1).

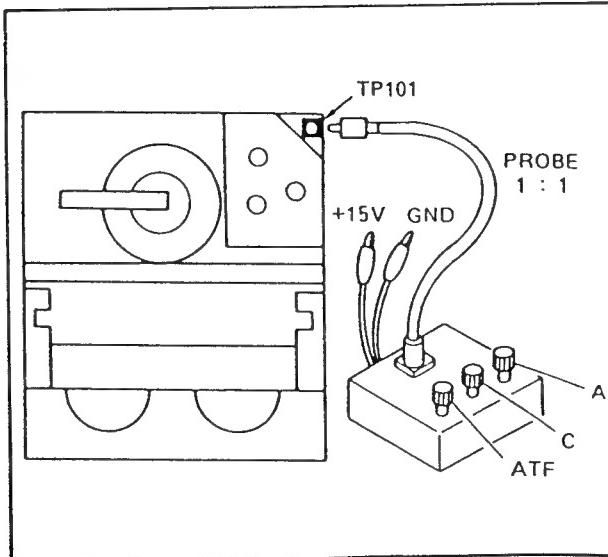


Fig. III-52

* Chrominance

SIGNAL	Red raster signal
ADJ.	VIDEO P.C.B. VR304 (REC C)
SPEC.	1.4 ± 0.1 Vp-p

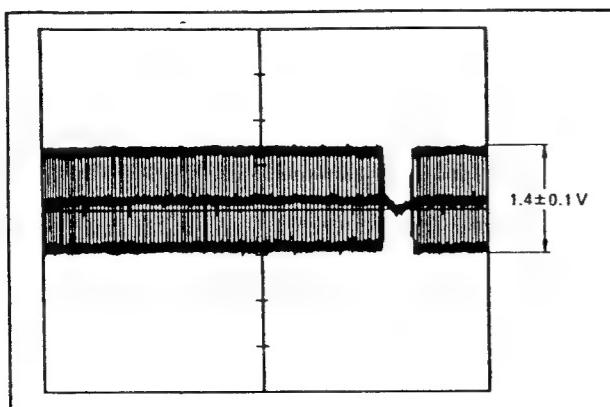


Fig. III-53 50 mV/2 ms

* ATF

SIGNAL	100% white video signal
ADJ.	VIDEO P.C.B. VR303 (REC ATF)
SPEC.	DC 0.6 ± 0.1 V

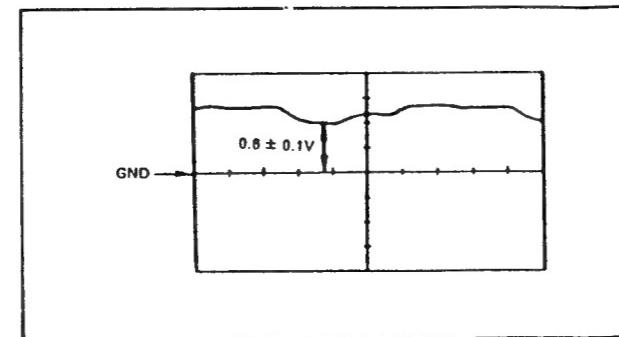
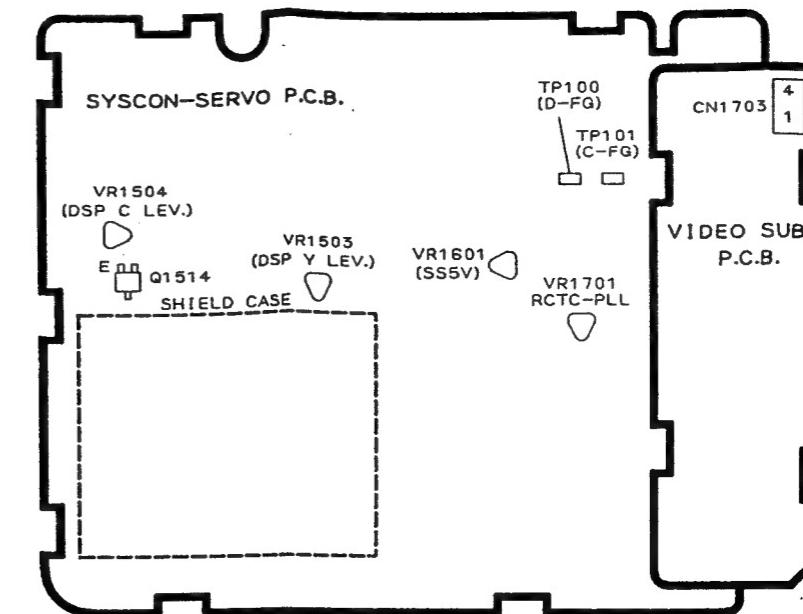


Fig. III-55 50 mV/10 ms

Locations of TP/VR, VC

-SYSCON-SERVO, VIDEO SUB P.C.B.



* Audio

* Note: Connect the AUDIO P.C.B.

SIGNAL	100% white video signal
ADJ.	VIDEO P.C.B. VR302 (REC AFM)
SPEC.	1.5 ± 0.1 Vp-p

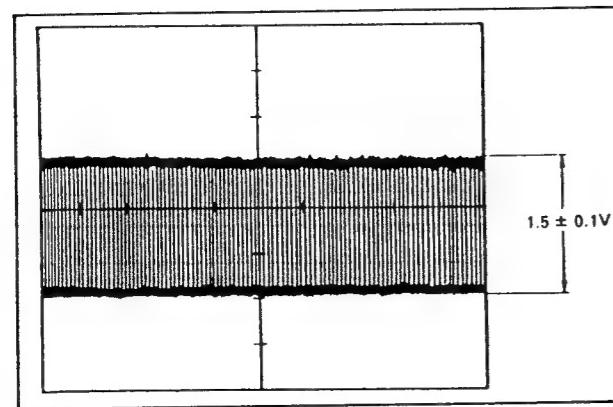
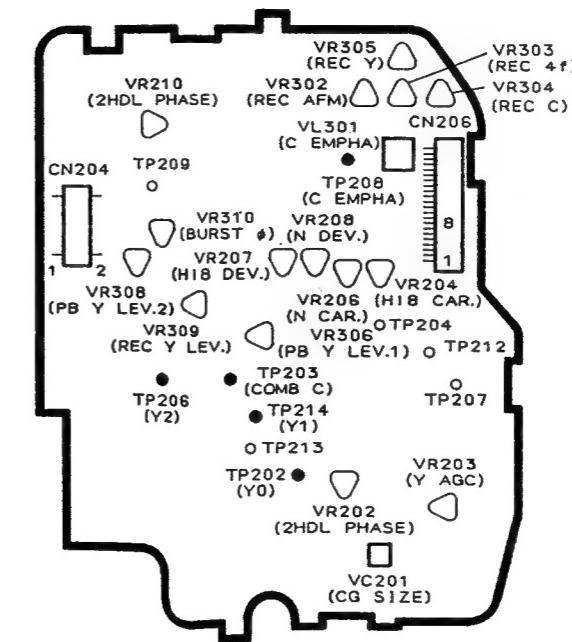
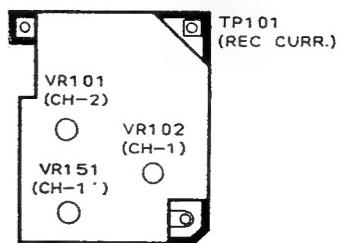


Fig. III-54 50 mV/2 ms

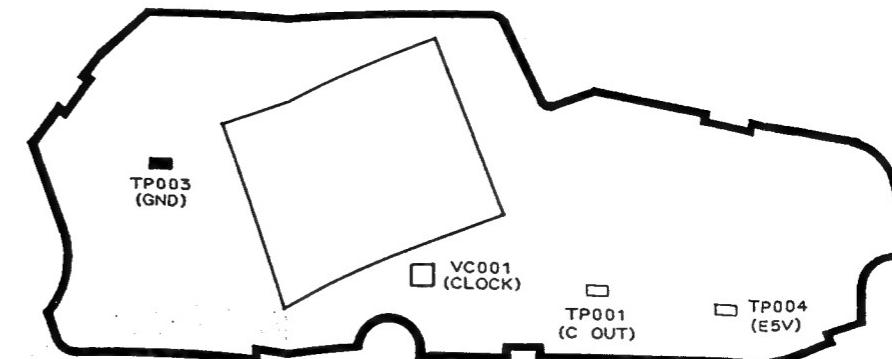
VIDEO P.C.B.



HEAD AMP P.C.B.



RECODER-KEY 1 P.C.B.



5. EVF Adjustments

5-1 Free-run frequency adjustment

SIGNAL	No signal (Terminal-opened)
MODE	EE
M. EQ.	Oscilloscope, Frequency counter
TP/TRIG.	EVF P.C.B. CW2901 pin 6 (HD)
ADJ.	EVF P.C.B. VR2902 (H. PHASE)
SPEC.	15.90 ± 0.05 KHz

5-2 Vertical amplitude adjustment

SIGNAL	Circle (round) subject
MODE	EE
M. EQ.	EVF, Monitor TV
ADJ.	EVF P.C.B. VR2901 (V-SIZE)
SPEC.	Free from distortion Absence of incongruity in comparison with monitor TV screen.

Procedures:

- (1) Shoot a circle figure subject fully in the screen.
- (2) Adjust the VR2901 so that there is no incongruity in comparison with the monitor TV screen.

5-3 Rotation and centering adjustment

MODE	EE
M. EQ.	EVF
ADJ.	Deflection yoke, Centering magnet
SPEC.	Screen is not tilted and is located right at the center.

Procedures:

- (1) Choose a subject for judgement of centering and tilting. Then shoot it.
- (2) Loosen the fastening ring to turn the deflection yoke.
- (3) Turn the deflection yoke to correct the tilting of subject.
- * Note: Move the deflection yoke completely toward the CRT screen.
- (4) Tighten the fastening ring.
- * Note: The fastening ring must be tightened so that the centering magnet can still be moved.
- (5) Adjust the centering magnet so as to locate the subject image at the center.
- (6) Tighten the fastening ring completely.
- (7) Fix the centering magnet by applying paint or the like (at 180° interval, 2 points).

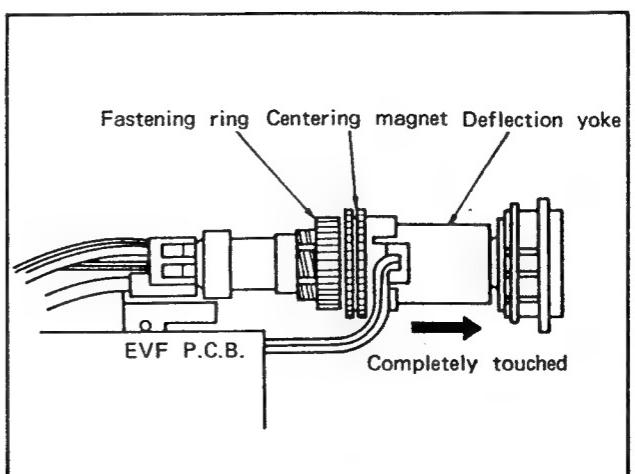


Fig. III-56

5-4 Brightness adjustment

SIGNAL	Self-record/playback tape (grayscale)
MODE	PLAY
M. EQ.	EVF
ADJ.	EVF P.C.B. VR2904 (BRIGHT)
SPEC.	Distinguishable down to 11th step grayscale

5-5 Focus adjustment

MODE	Lens-capped (character indication)
M. EQ.	EVF
ADJ.	EVF P.C.B. VR2903 (FOCUS)
SPEC.	EVF character under optimum focus

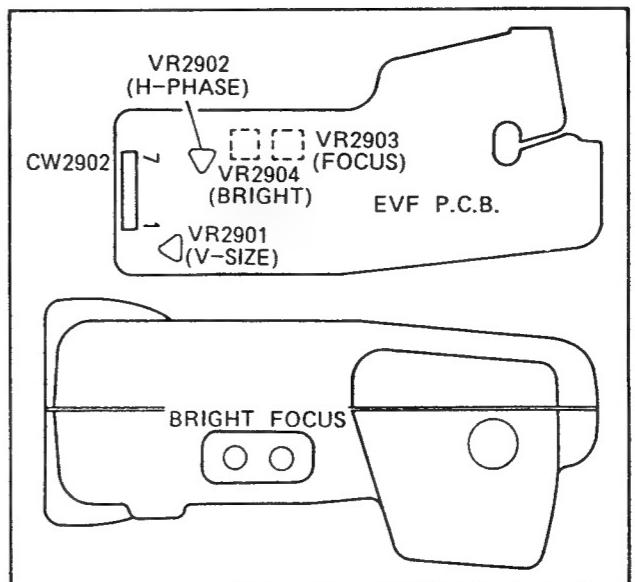


Fig. III-57

6. Mechanical Adjustment

For mechanical adjustment, disassemble the unit separately.

Setting for the tape recorder.

6-1 Mechanical adjustment

Additional items to be checked in 4-3.

Perform the steps written on the next page.

Then, add the following peculiar to the EVF.

(5) Slightly turn the B.C. so that the B.C.

6-2 How to drive

To operate the unit, apply the power.

6-3 Replacement

Refer to the Service Manual (Replacement of parts).

* Parts (a) in the Service Manual (Not soldered).

6. Mechanical Adjustment of Recorder Section

For mechanical adjustment of the recorder section, refer to the MC-4B Service Manual issued separately.

Setting for tape path adjustment, refer to Fig. II-10 on page II-5.

(The additional mechanical adjustment items for this model only are explained here.)

6-1 Mechanical adjustments

Additional item for fine tracking adjustment in 4-3.

Perform the steps from (1) through (4) as written on the manual.

Then, add the following step of adjustment (5) peculiar to the Hi8 type.

- (5) Slightly turn the No. 6 guide clockwise so that $B:C = 4:3.5$. (See Fig.III-58.)

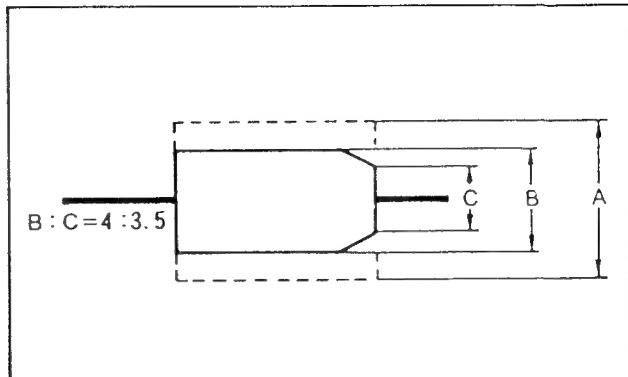


Fig. III-58

6-2 How to drive loading motor

To operate the loading motor independently, apply the power directly. (Fig.III-59)

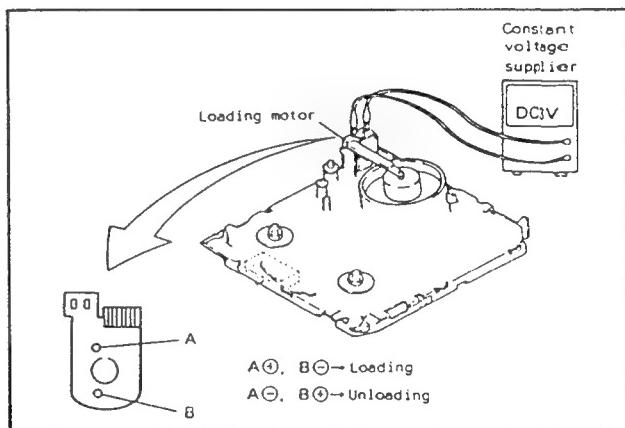


Fig. III-59

6-3 Replacement of upper drum

Refer to the Service Manual for MC-4B.
(Replacement of upper drum, 3-20)

* Parts ① in the Fig.III-60 are plug-in type
(Not soldered as in the conventional models)

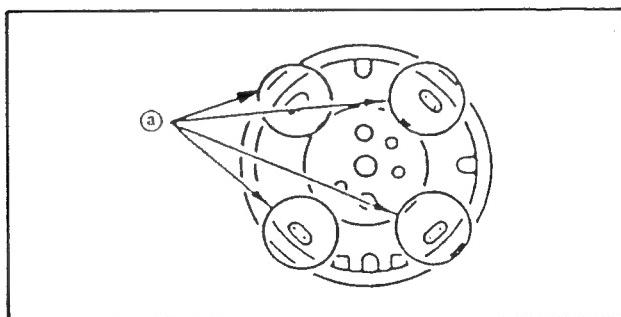


Fig. III-60



CONTENTS

EXPLODED VIEWS

Casing Parts Section	IV - 1
Camera Units Section	IV - 3
EVF / Recorder Unit Section	IV - 5
Mechanical Chassis Section 1	IV - 7
Mechanical Chassis Section 2	IV - 9
Mechanical Chassis Section 3	IV - 11
Accessory Parts Section	IV - 13

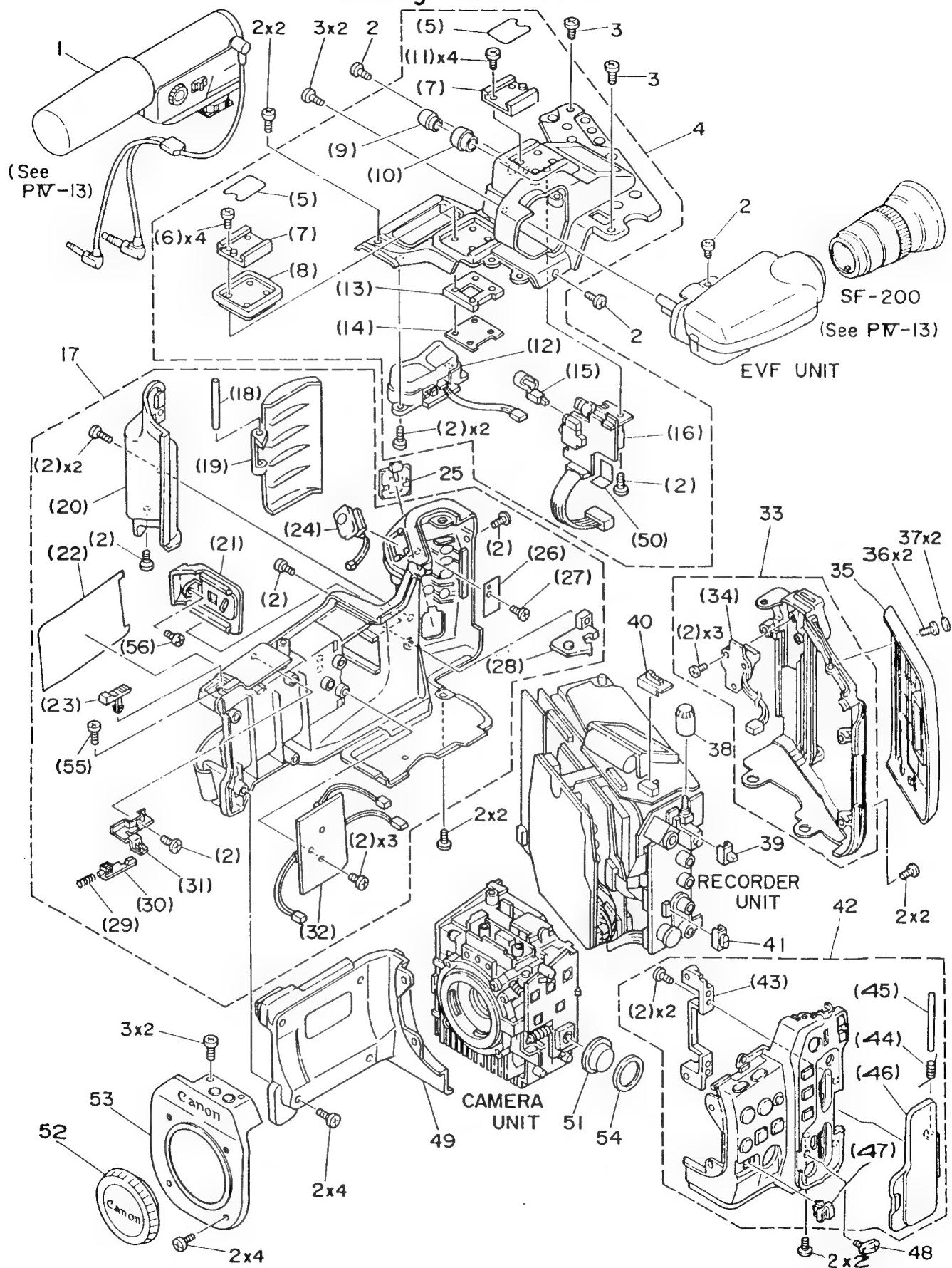
ELECTRICAL PARTS LIST	IV - 15
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PARTS LIST	IV - 21
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CAUTION

1. ESPECIALLY CRITICAL PARTS IN THE POWER CIRCUIT BLOCK SHOULD NOT BE REPLACED WITH OTHER MARKS.
CRITICAL PARTS ARE MARKED WITH  IN THIS ELECTRICAL PARTS LIST.
2. THE NUMBERS INDICATED ON THE CONNECTORS DO NOT CORRESPOND TO THE SYMBOL NUMBERS.
PLEASE CHECK THE CORRECT SYMBOL NUMBERS OF THE CONNECTORS ON THE INTERCONNECTION SCHEMATIC DIAGRAM.
3. THE MECHANICAL PARTS WITH NO SYMBOL NUMBERS IN THE EXPLODED VIEWS ARE NOT SUPPLIED.

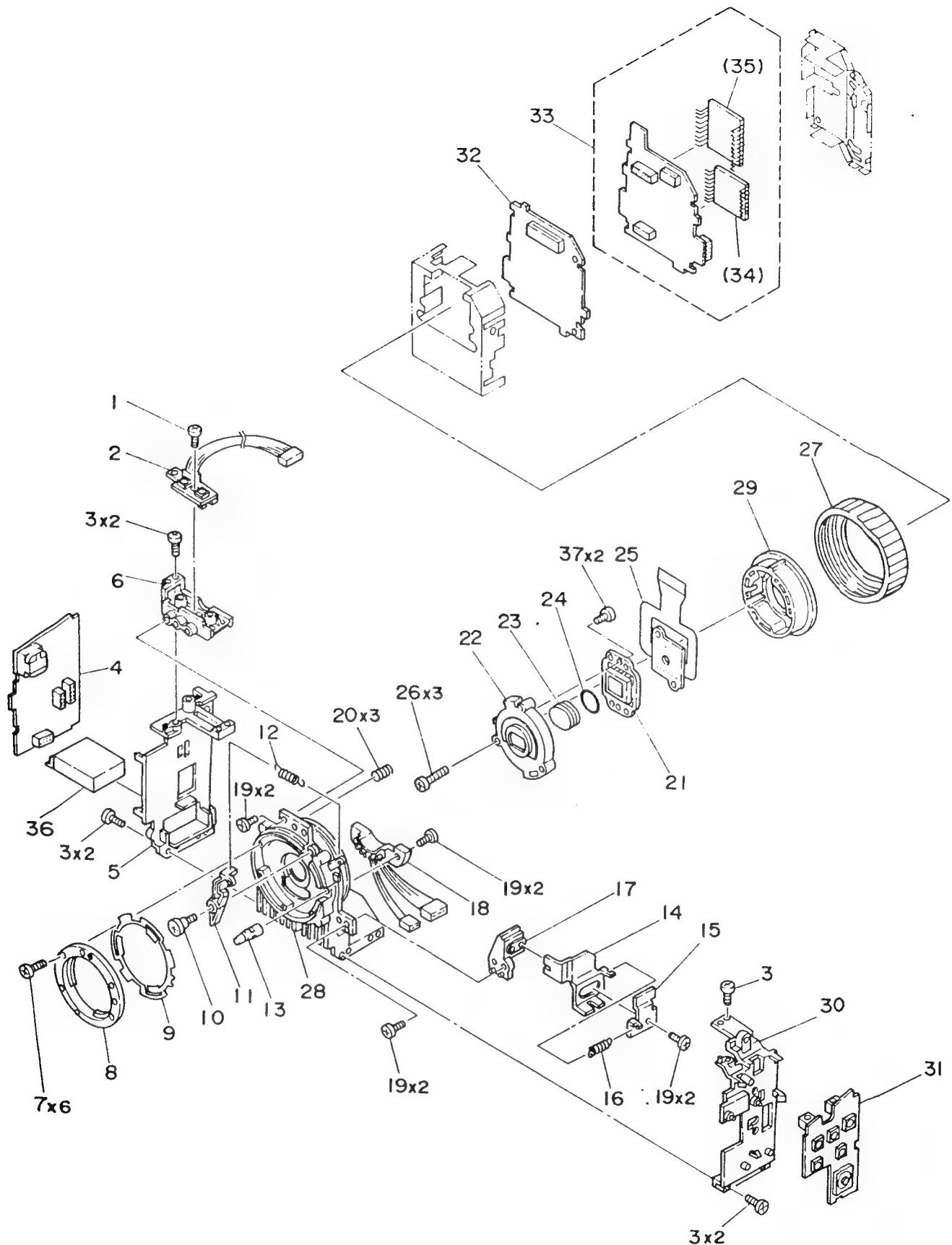
Casing Parts Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DH9-0527-000 000	B	1	MICROPHONE	
2	XA4-9200-509 000	F	36	SCREW, CROSS-RECESS, PH	
3	XA4-9200-709 000	F	6	SCREW, CROSS-RECESS, PH	
4	DY1-7515-000 000	B	1	TOP COVER ASS'Y	
5	DA1-4500-000 000	B	2	SHETT, ACCESSORY SHOE	
6	DA1-4496-000 000	F	4	SCREW, CROSS-RECESS	
7	DA1-4499-000 000	B	2	SHOE, ACCESSORY	
8	DA1-4494-000 000	B	1	DAMPER (1)	
9	DY1-7317-000 000	B	1	KNOB, AUDIO VOLUME (R)	
10	DY1-7318-000 000	B	1	KNOB, AUDIO VOLUME (L)	
11	XA4-8200-609 000	F	4	SCREW, CROSS-RECESS, FCH	
12	DY2-1352-000 000	B	1	ZOOM SWITCH (1)	
13	DA1-4495-000 000	B	1	DAMPER (2)	
14	DA1-4400-000 000	C	1	PLATE	
15	DA1-4342-000 000	B	1	BUTTON, ATTENATOR	
16	DG1-1384-000 000	C	1	MIC P.C.B.	
17	DG1-2270-000 000	B	1	LEFT COVER ASS'Y	
18	DA1-2211-000 000	C	1	SHAFT	
19	DA1-5698-000 000	B	1	COVER (A), GRIP	
20	DA1-4372-000 000	B	1	COVER (B), GRIP	
21	DF1-0874-000 000	B	1	BUTTON, TRIGGER	
22	DA1-4353-000 000	B	1	SEAL	
23	DA1-4329-000 000	B	1	KNOB, BATTERY	
24	DY1-7210-000 000	B	1	COVER, TRIGER SWITCH	
25	DA1-4346-000 000	C	1	COVER, LITHIUM BATTERY	
26	DA1-4397-000 000	C	1	SPRING, PLATE	
27	XA4-9200-409 000	F	1	SCREW, CROSS-RECESS, PH	
28	DA1-4350-000 000	C	1	HOLDER, GRIP COVER (B)	
29	DS1-5182-000 000	C	1	SPRING, COIL	
30	DA1-4330-000 000	C	1	HOOK. BATTERY	
31	DA1-4331-000 000	C	1	LEVER, BATTERY	
32	DG1-1412-010 000	C	1	FUSE BATTERY P.C.B.	
33	DG1-1391-000 000	B	1	COVER, REAR	
34	DG1-1196-000 000	B	1	ZOOM SWITCH (2)	
35	DF1-1226-000 000	B	1	COVER, CASSETTE	
36	XAI-7200-409 000	F	2	SCREW, CROSS-RECESS, PH	
37	DA1-4344-000 000	A	2	SEAL	
38	DA1-4323-000 000	B	1	VOLUME, KNOB, HEADPHONE	
39	DA1-5357-000 000	B	1	KNOB, CAMERA MODE	
40	DA1-4319-000 000	B	1	KNOB, EJECT	
41	DA1-4316-000 000	B	1	KNOB, EDIT	
42	DG1-2269-000 000	B	1	RIGHT COVER ASS'Y	
43	DA1-4337-000 000	C	1	HOLDER, JACK	
44	DS1-6075-000 000	C	1	SPRING, COIL	
45	DA1-4336-000 000	C	1	SHAFT	
46	DA1-5696-000 000	B	1	COVER, JACK	
47	DA1-4321-000 000	B	1	KNOB, LENS EJECT	
48	XAI-7200-509 000	F	1	SCREW, CROSS-RECESS, PH	
49	DY2-1362-000 000	B	1	GRIP COVER	
50	DA1-5491-000 000	C	1	SHEET	
51	DA1-4322-000 000	B	1	KNOB, IRIS	
52	DA1-4345-000 000	B	1	CAP, CAMERA	
53	DF1-1223-000 000	B	1	COVER, FRONT	
54	DA1-4394-000 000	C	1	CUSHION, IRIS	
55	DA1-5355-000 000	F	1	SCREW, CROSS-RECESS	
56	X99-0619-000 000	F	1	SCREW, CROSS-RECESS	

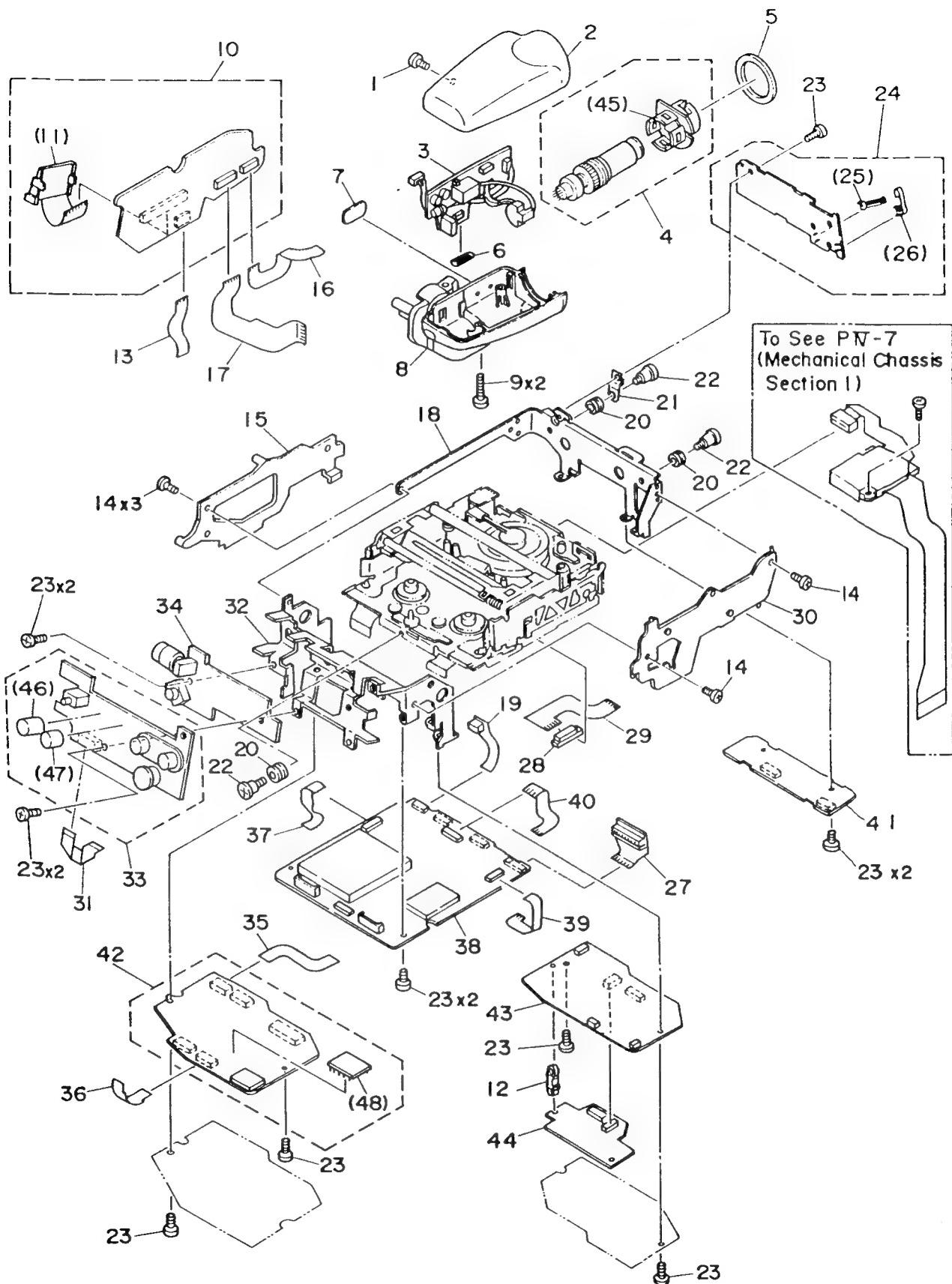
Camera Unit Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	XA4-6200-359 000	F	1	SCREW, CROSS-RECESS, FCH	
2	DG1-1404-000 000	C	1	CAMERA KEY (2) P.C.B.	
3	XA4-9200-509 000	F	7	SCREW, CROSS-RECESS, PH	
4	DG1-2268-000 000	C	1	AF P.C.B.	
5	DAL-4294-000 000	C	1	HOLDER (1), CAMERA	
6	DAL-4296-000 000	C	1	HOLDER, CAMERA-KEY (2)	
7	XA4-6200-707 000	F	6	SCREW, CROSS-RECESS, FCH	
8	DAL-4285-000 000	B	1	MOUNT, CAMERA	
9	DAL-4286-000 000	C	1	SPRING, MOUNT	
10	DAL-4300-000 000	C	1	SCREW, CROSS-RECESS	
11	DAL-4293-000 000	C	1	SWITCH LEVER	
12	DS1-5236-000 000	C	1	SPRING, COIL (1)	
13	DAL-4287-000 000	C	1	LOCK PIN, CAMERA	
14	DAL-4288-000 000	C	1	LOCK LEVER, CAMERA	
15	DAL-4290-000 000	C	1	HOLD, LEVER	
16	DS1-5238-000 000	C	1	SPRING, COIL (3)	
17	DAL-4289-000 000	C	1	GUIDE, LEVER	
18	DY1-7503-000 000	B	1	CONTACT ASS'Y	
19	XA4-9200-609 000	F	8	SCREW, CROSS-RECESS, PH	
20	DS1-5235-000 000	C	3	SPRING, COIL	
21	DY1-7514-000 000	C	1	CCD ASS'Y	
22	DH9-0515-000 000	C	1	ACTUATOR	
23	DH9-0537-000 000	C	1	CRYSTAL FILTER	
24	DAL-4356-000 000	C	1	SEAL, RUBBER	
25	DH2-1549-000 000	C	1	FPC, CCD ASS'Y	
26	XA4-6201-209 000	F	3	SCREW, CROSS-RECESS, FCH	
27	DAL-4279-000 000	C	1	RING, ADJUST	
28	DAL-4276-000 000	C	1	BASE, CAMERA	
29	DAL-5359-000 000	C	1	HOLDER, PLATE	
30	DAL-4295-000 000	C	1	HOLDER (2), CAMERA	
31	DG1-2230-000 000	C	1	CAMERA KEY (1) P.C.B.	
32	DG1-2266-000 000	C	1	PROCESS (1) P.C.B.	
33	DG1-2267-000 000	C	1	PROCESS (2) P.C.B.	
34	DH4-0603-000 000	C	1	ENCODER P.C.B.	
35	DH4-0272-000 000	C	1	MATRIX P.C.B.	
36	DH3-0017-000 000	C	1	DC/DC CONVERTER	
37	XA4-9170-409 000	F	2	SCREW, CROSS-RECESS, PH	

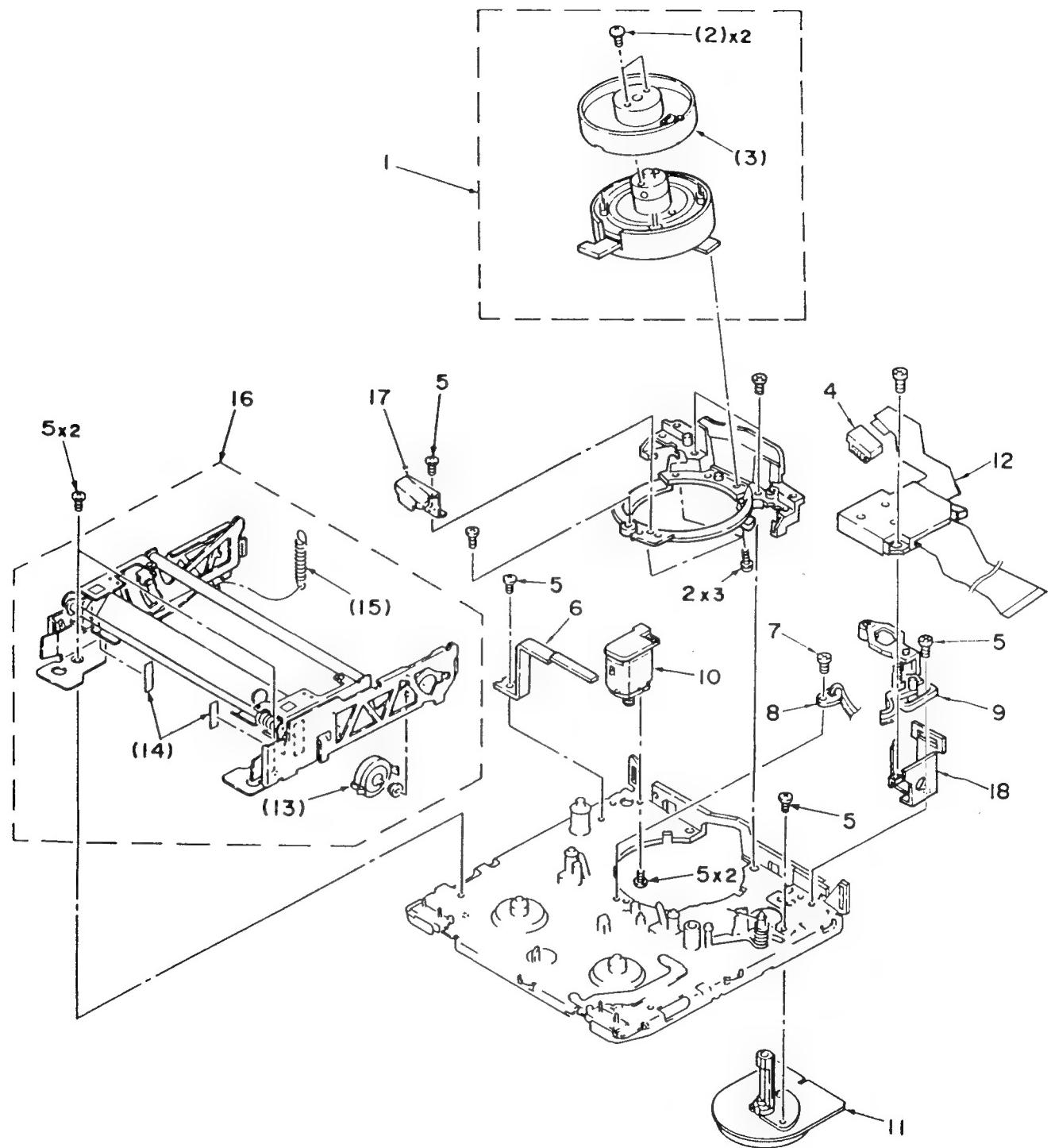
EVF / Recorder Unit Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	XA9-0682-000 000	F	1	SCREW, CROSS-RECESS, PH	
2	DY2-1288-000 000	B	1	TOP COVER, E.V.F.	
3	DY2-1316-000 000	C	1	E.V.F. P.C.B.	
4	DY2-1291-000 000	C	1	CRT ASS'Y	
5	DAL-1864-000 000	B	1	RING, RUBBER	
6	DA1-3857-000 000	B	1	SLIDE SWITCH, E.V.F.	
7	DA1-1677-000 000	B	1	PLATE, COVER	
8	DY1-7504-000 000	B	1	BOTTOM COVER, E.V.F.	
9	XB4-6201-609 000	F	2	SCREW, CROSS-RECESS	
10	DG1-2264-000 000	C	1	RECORDER KEY (1) P.C.B.	
11	DY1-7505-000 000	C	1	LCD ASS'Y	
12	DAL-3764-000 000	C	1	HOLDER, P.C.B.	
13	DH2-1318-000 000	C	1	PRINTED CORD	
14	XA9-0484-000 000	F	5	SCREW, CROSS-RECESS, FCH	
15	DAL-4338-000 000	C	1	HOLDER (1), RECORDER	
16	DH2-1309-000 000	C	1	PRINTED CORD	
17	DH2-1307-000 000	C	1	PRINTED CORD	
18	DA1-3754-000 000	C	1	HOLDER (4), RECORDER	
19	DF1-0778-000 000	C	1	PRINTED CORD ASS'Y	
20	DAL-3765-000 000	C	3	MECHA. DAMPER	
21	DA1-3756-000 000	C	1	PLATE, GROUND	
22	DA1-3755-000 000	F	3	SCREW, CROSS-RECESS	
23	XAL-7200-307 000	F	13	SCREW, CROSS-RECESS, PH	
24	DG1-1381-000 000	C	1	RECORDER KEY (2) P.C.B.	
25	DAL-3763-000 000	C	1	TERMINAL (2), LITHIUM BATTERY	
26	DA1-3762-000 000	C	1	TERMINAL (1), LITHIUM BATTERY	
27	DF1-0541-000 000	C	1	PRINTED CORD ASS'Y	
28	DH2-1250-000 000	C	1	CONNECTOR 11P	
29	DH2-1301-000 000	C	1	PRINTED CORD	
30	DA1-3752-000 000	C	1	HOLDER (2), RECORDER	
31	DH2-1547-000 000	C	1	PRINTED CORD	
32	DF1-1010-000 000	C	1	HOLDER (3), RECORDER	
33	DG1-2225-000 000	C	1	TERMINAL P.C.B.	
34	DG1-1382-000 000	C	1	HEAD PHONE P.C.B.	
35	DH2-1308-000 000	C	1	PRINTED CORD	
36	DH2-1541-000 000	C	1	PRINTED CORD	
37	DH2-1304-000 000	C	1	PRINTED CORD	
38	DG1-2263-000 000	C	1	SYS CON SERVO P.C.B.	
39	DH2-1306-000 000	C	1	PRINTED CORD	
40	DH2-1305-000 000	C	1	PRINTED CORD	
41	DG1-2235-000 000	C	1	VIDEO SUB P.C.B.	
42	DG1-2262-000 000	C	1	VIDEO P.C.B.	
43	DY1-7264-000 000	C	1	AUDIO (1) P.C.B.	
44	DY1-7265-000 000	C	1	AUDIO (2) P.C.B.	
45	DAL-2164-000 000	C	1	MASK, CRT	
46	WS6-0104-000 000	C	1	JACK, PIN (WHITE)	
47	WS6-0105-000 000	C	1	JACK, PIN (RED)	
48	DH4-0301-000 000	B	1	JOG P.C.B.	

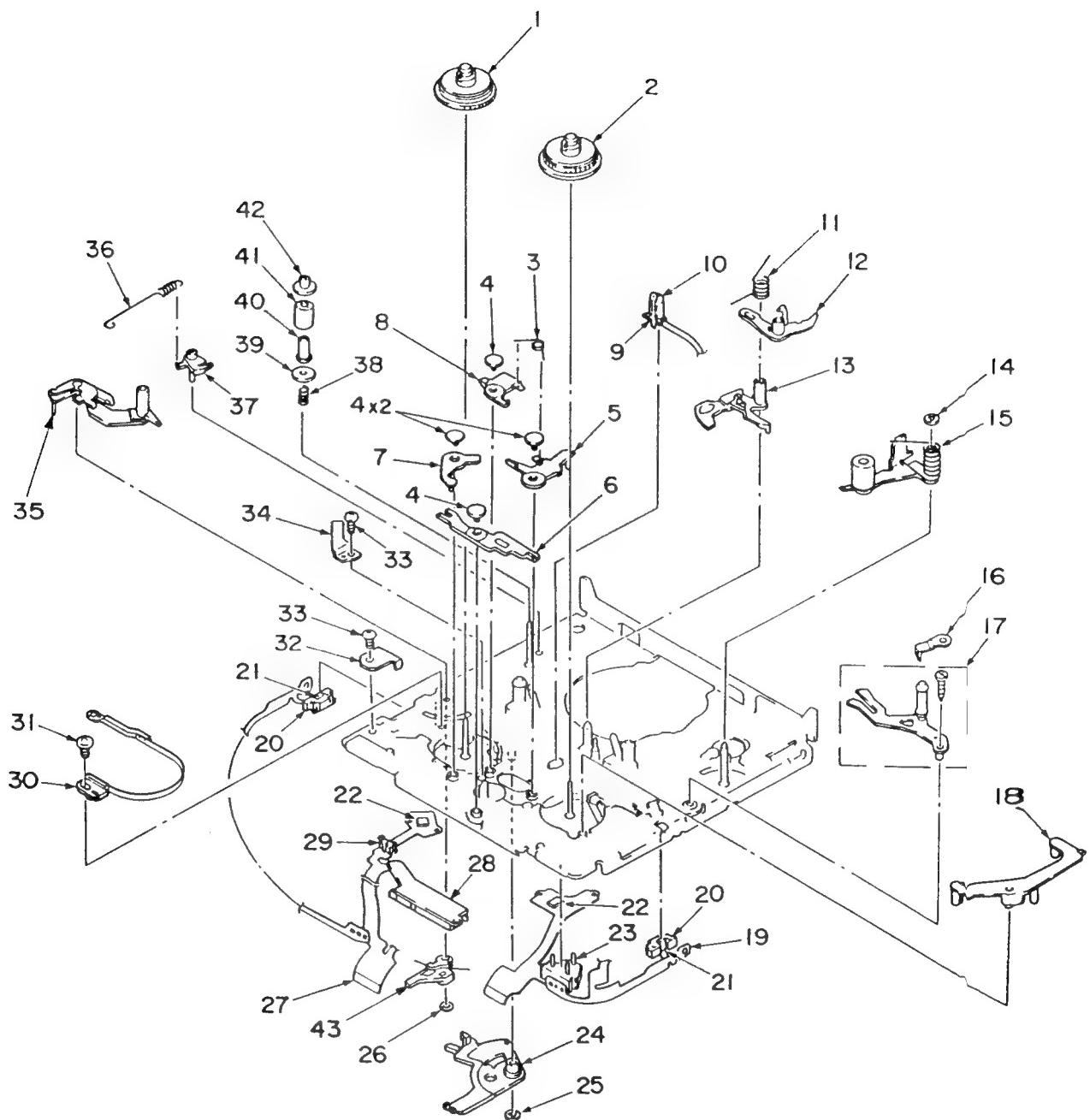
Mechanical Chassis Section I



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY4-2936-000 000	E	1	DRUM ASS'Y	
2	DY4-2730-000 000	F	5	SCREW, CROSS-RECESS	
3	DY4-2937-000 000	E	1	UPPER DRUM ASS'Y	
4	DY4-2920-000 000	C	1	CONNECTOR 13P	
5	DY4-2727-000 000	F	8	SCREW, CROSS-RECESS	
6	DY4-2675-000 000	C	1	TERMINAL, EARTH	
7	DY4-2728-000 000	F	1	SCREW, CROSS-RECESS	
8	Y22-8120-000 000	B	1	SENSOR, DEW	
9	DY4-2910-000 000	C	1	ROLLER ASS'Y	
10	DY4-2911-000 000	C	1	LOADING MOTOR ASS'Y	
11	DY4-2726-000 000	C	1	CAPSTAN MOTOR	
12	DY4-3091-000 000	C	1	HEAD AMP ASS'Y	
13	DY4-2720-000 000	C	1	DAMPER, OIL	
14	DY4-2729-000 000	C	2	TAPE	
15	DY4-2708-000 000	C	1	SPRING, COIL	
16	DY4-2673-000 000	C	1	CASSETTE COMPARTMENT ASS'Y	
17	DY4-2721-000 000	C	1	GUARD, GUIDE	
18	DY4-2925-000 000	C	1	HOLDER	

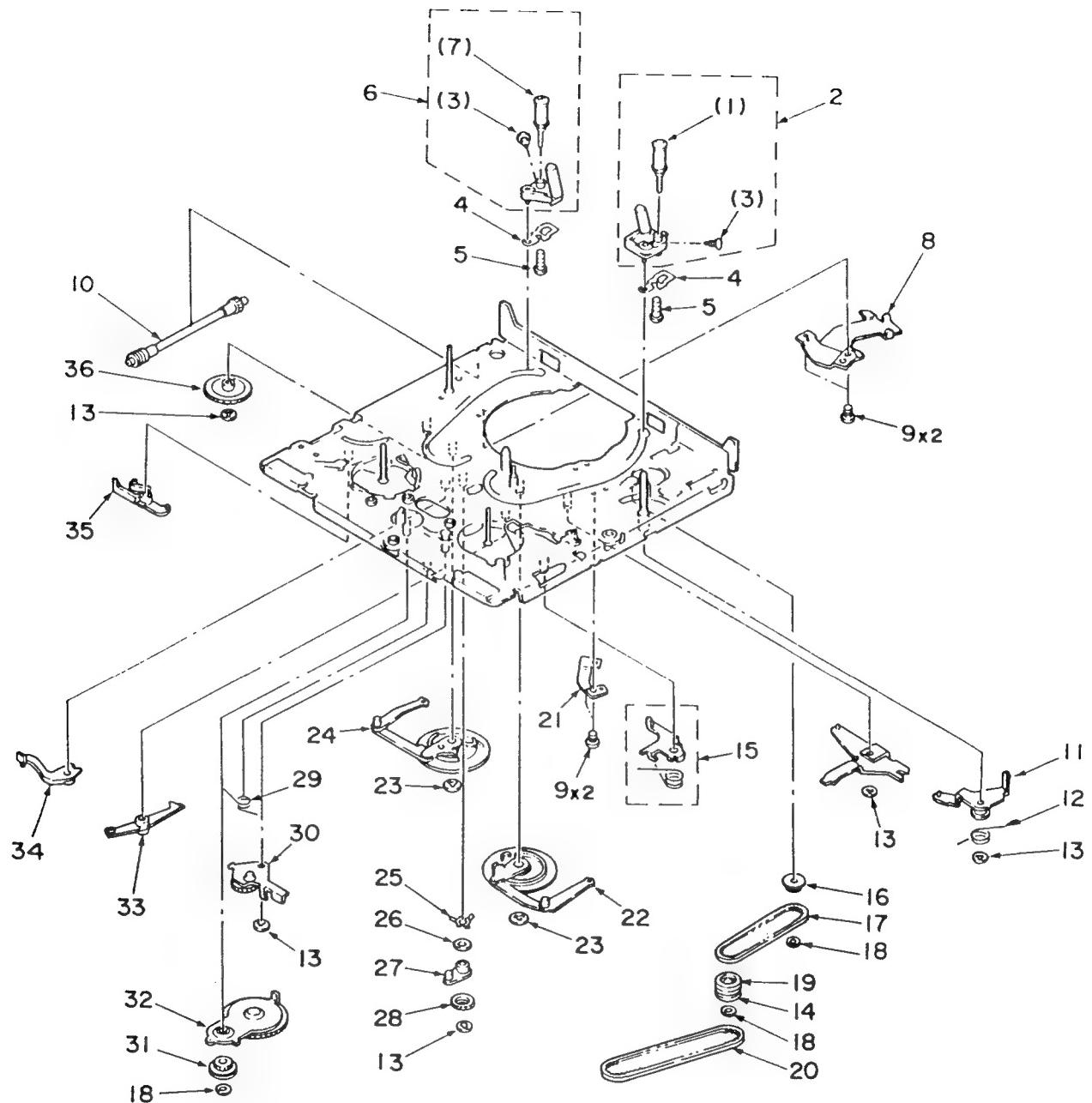
Mechanical Chassis Section 2



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY4-2663-000 000	C	1	REEL, SUPPLY	
2	DY4-2666-000 000	C	1	REEL, TAKE UP	
3	DY4-2699-000 000	C	1	SPRING, COIL	
4	DY4-2696-000 000	C	4	PIN, SHAFT	
5	DY4-2714-000 000	C	1	BRAKE, T	
6	DY4-2692-000 000	C	1	LEVER, LB	
7	DY4-2691-000 000	C	1	BRAKE, LB	
8	DY4-2713-000 000	C	1	BRAKE, S	
9	DY4-2710-000 000	C	1	HOLDER, LED	
10	Y22-8012-000 000	B	1	LED GL452S	
11	DY4-2697-000 000	C	1	SPRING, COIL	
12	DY4-2716-000 000	C	1	ARM, STOPPER	
13	DY4-2723-000 000	C	1	STOPPER, RK	
14	DY4-2440-000 000	F	1	WASHER	
15	DY4-2912-000 000	C	1	ARM, PINCH	
16	DY4-2707-000 000	C	1	SPRING, PLATE	
17	DY4-2664-000 000	C	1	ARM, TG7	
18	DY4-2712-000 000	C	1	ARM, RELEASE	
19	DY4-2680-000 000	C	1	FLEXIBLE P.C.B. (2)	
20	DY4-2722-000 000	C	2	HOLDER, SENSOR	
21	Y22-8123-000 000	B	2	PHOTO TRANSISTOR EE-TP109	
22	Y22-8121-000 000	B	2	PHOTO IC SPI-315-25-CD	
23	DY4-2678-000 000	C	1	SWITCH, PUSH	
24	DY4-2917-000 000	C	1	LEVER, SWITCH	
25	DY4-2688-000 000	F	1	WASHER	
26	DY4-2681-000 000	F	1	WASHER	
27	DY4-2679-000 000	C	1	FLEXIBLE P.C.B. (1)	
28	DY4-2921-000 000	C	1	SWITCH, SLIDE	
29	DY4-2676-000 000	C	1	SWITCH	
30	DY4-2660-000 000	C	1	BAND, TENSION	
31	DY4-2727-000 000	F	1	SCREW, CROSS-RECESS	
32	DY4-2725-000 000	C	1	PLATE, SWITCH	
33	DY4-2728-000 000	F	2	SCREW, CROSS-RECESS	
34	DY4-2690-000 000	C	1	PLATE, TL	
35	DY4-2669-000 000	C	1	ARM	
36	DY4-2724-000 000	C	1	SPRING, COIL	
37	DY4-2717-000 000	C	1	ARM, ADJUST	
38	DY4-2705-000 000	C	1	SPRING, COIL	
39	DY4-2701-000 000	C	1	FLANGE, TG2	
40	DY4-2704-000 000	C	1	SLEEVE, TG2	
41	DY4-2702-000 000	C	1	ROLLER, TG2	
42	DY4-2703-000 000	C	1	FLANGE, TG2	
43	DY4-2914-000 000	C	1	STOPPER	

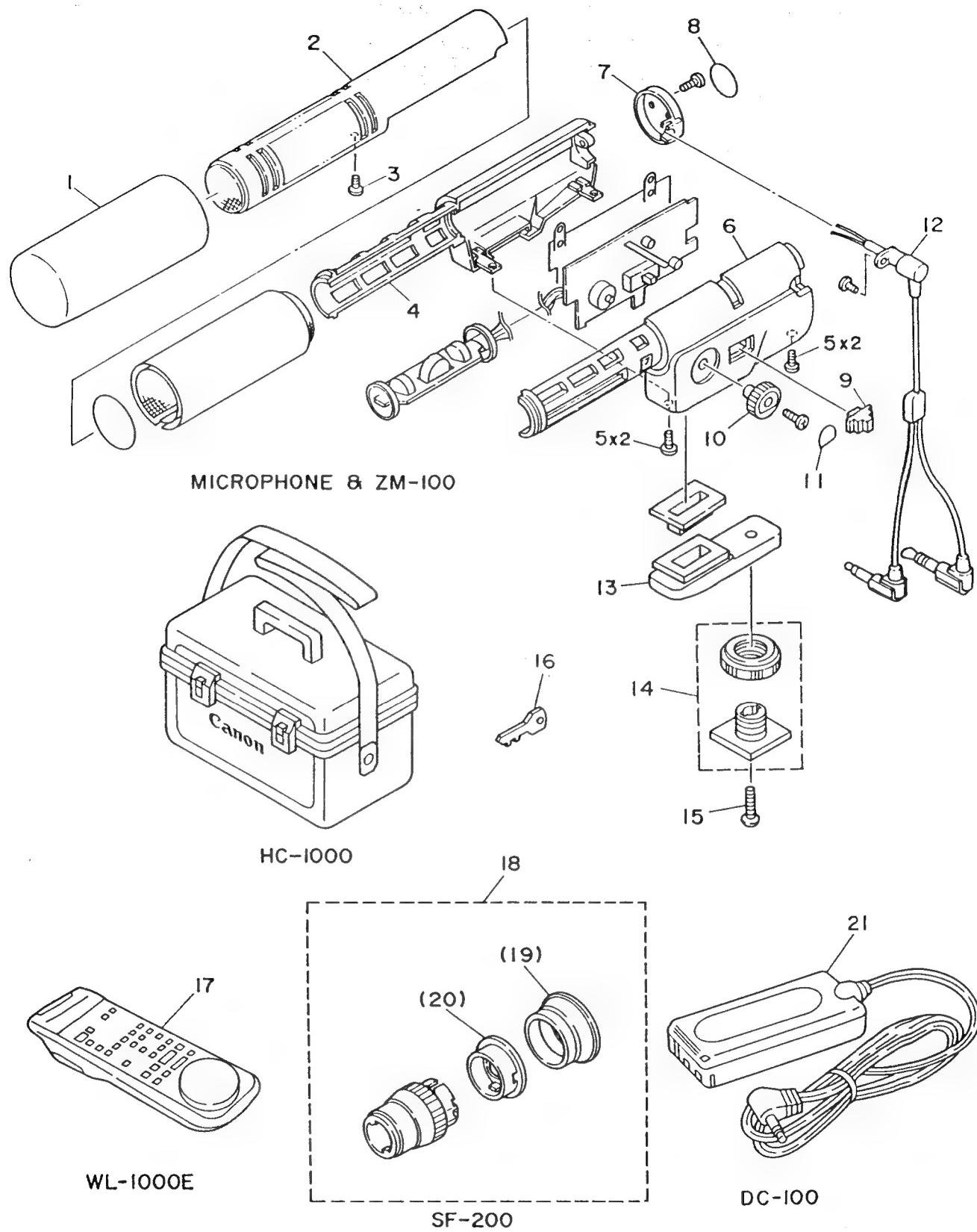
Mechanical Chassis Section 3



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY4-2674-000 000	C	1	ROLLER, GUIDE	
2	DY4-2649-000 000	C	1	COASTER, RIGHT	
3	DY4-2686-000 000	F	2	SCREW, CROSS-RECESS	
4	DY4-2685-000 000	C	2	SPRING, LEAF	
5	DY4-2689-000 000	F	2	SCREW, CROSS-RECESS	
6	DY4-2648-000 000	C	1	COASTER, LEFT	
7	DY4-2662-000 000	C	1	ROLLER, GUIDE	
8	DY4-2672-000 000	C	1	PLATE, SS	
9	DY4-2728-000 000	F	4	SCREW, CROSS-RECESS	
10	DY4-2919-000 000	C	1	WORM ASS'Y	
11	DY4-2665-000 000	C	1	ARM, PINCH SUB	
12	DY4-2706-000 000	C	1	SPRING, COIL	
13	DY4-2688-000 000	F	5	WASHER	
14	DY4-2922-000 000	C	1	PULLEY, RELAY B	
15	DY4-2659-000 000	C	1	BRAKE, TS	
16	DY4-2656-000 000	C	1	GEAR, JOINT	
17	DY4-2719-000 000	E	1	BELT(S), TIMING	
18	DY4-2681-000 000	F	3	WASHER	
19	DY4-3004-000 000	C	1	PULLEY, RELAY A	
20	DY4-2923-000 000	C	1	BELT(L), TIMING	
21	DY4-2684-000 000	C	1	PLATE, TT	
22	DY4-2743-000 000	C	1	GEAR	
23	DY4-2440-000 000	F	2	WASHER	
24	DY4-2742-000 000	C	1	GEAR	
25	DY4-2700-000 000	C	1	SPRING	
26	DY4-2527-000 000	F	1	WASHER	
27	DY4-2695-000 000	C	1	ARM, UL	
28	DY4-2694-000 000	C	1	GEAR, UL	
29	DY4-2698-000 000	C	1	SPRING, COIL	
30	DY4-2650-000 000	C	1	GEAR ASS'Y	
31	DY4-2915-000 000	C	1	GEAR, RC	
32	DY4-2918-000 000	C	1	GEAR, RK	
33	DY4-2693-000 000	C	1	ARM, RELEASE	
34	DY4-2715-000 000	C	1	BRAKE, UL	
35	DY4-2711-000 000	C	1	LEVER, EJECT	
36	DY4-2924-000 000	C	1	GEAR, WHEEL	

Accessory Parts Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY4-2964-010 000	B	1	WIND SCREEN	
2	DY4-2977-000 000	B	1	COVER, TOP	
3	DY4-2965-000 000	F	1	SCREW, CROSS-RECESS	
4	DY4-2976-000 000	B	1	COVER, LEFT	
5	DY4-2966-000 000	F	4	SCREW, CROSS-RECESS	
6	DY4-2975-000 000	B	1	COVER, RIGHT	
7	DY4-2974-000 000	B	1	COVER, REAR	
8	DY4-2969-000 000	B	1	PLATE, NAME	
9	DY4-2971-000 000	B	1	KNOB	
10	DY4-2972-000 000	B	1	KNOB	
11	DY4-2970-000 000	B	1	PLATE, NAME	
12	DY4-2968-000 000	B	1	CORD, STRAIGHT W/PLUG	
	DY4-2963-000 000	B	1	CORD, CURLED W/PLUG	ZM-100 ONLY
13	DY4-2973-000 000	B	1	HOLDER, MIC	
14	DY4-2962-000 000	C	1	SHOE, ACCESSORY	
15	DY4-2967-000 000	F	1	SCREW, CROSS-RECESS	
16	DY4-4386-000 000	C	1	KEY, HARD CASE	
17	DY1-7516-000 000	B	1	WIRELESS REMOTE CONTROLLER WL-1000E	
18	DY2-1223-000 000	B	1	SPORTS FINDER SF-200	
19	DA1-4051-000 000	C	1	EYE CUP	
20	DA1-4054-000 000	C	1	MASK, EYEPIECE	
21	DY2-1347-000 000	B	1	COUPLER, DC-100	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
△	C2911	VC6-4130-106 000	D	1 CAPACITOR, AL/EL 10μF/16V	
△	C2915	VC7-1360-102 000	D	1 CAPACITOR, CERA 1000pF/1KV	
△	C2917	VC7-1380-152 000	D	1 CAPACITOR, CERA 1500pF/500V	
	CN001	VS1-5256-012 000	C	1 CONNECTOR 12P	
	CN002	VS1-5051-008 000	C	1 CONNECTOR 8P	
	CN006	VS1-5256-020 000	C	1 CONNECTOR 20P	
	CN007	VS1-1169-028 000	C	1 CONNECTOR 28P	
	CN100	VS1-1169-010 000	C	1 CONNECTOR 10P	
	CN101	VS1-1169-015 000	C	1 CONNECTOR 15P	
	CN102	VS1-5256-016 000	C	1 CONNECTOR 16P	
	CN201	VS1-1169-008 000	C	1 CONNECTOR 8P	
	CN202	VS1-5149-008 000	C	1 CONNECTOR 8P	
CN203/CN2307/ CN2511		DH2-1398-000 000	C	1 CONNECTOR ASS'Y, 7P	
	CN204	VS1-5256-024 000	C	1 CONNECTOR 24P	
	CN205	VS1-5256-024 000	C	1 CONNECTOR 24P	
	CN206	VS1-1169-022 000	C	1 CONNECTOR 22P	
	CN207	VS1-5256-012 000	C	1 CONNECTOR 12P	
	CN702	VS1-5106-014 000	C	1 CONNECTOR 14P	
CN901/CN1301		DH2-1392-000 000	C	1 CONNECTOR CABLE ASS'Y	
	CN904	VS1-5105-010 000	C	1 CONNECTOR 10P	
	CN905	VS1-5256-016 000	C	1 CONNECTOR 16P	
CN907/CN1303		DH2-1391-000 000	C	1 CONNECTOR CABLE ASS'Y	
	CN1401	VS1-5149-008 000	C	1 CONNECTOR 8P	
	CN1501	VS1-5256-024 000	C	1 CONNECTOR 24P	
	CN1601	VS1-1169-005 000	C	1 CONNECTOR 5P	
	CN1603	VS1-5256-024 000	C	1 CONNECTOR 24P	
	CN1604	VS1-5256-016 000	C	1 CONNECTOR 16P	
	CN1606	VS1-0876-013 000	C	1 CONNECTOR 13P	
	CN1607	VS1-5256-020 000	C	1 CONNECTOR 20P	
	CN1608	VS1-0876-011 000	C	1 CONNECTOR 11P	
	CN1701	VS1-5256-012 000	C	1 CONNECTOR 12P	
	CN1702	VS1-5256-016 000	C	1 CONNECTOR 16P	
	CN1801	VS1-5106-010 000	C	1 CONNECTOR 10P	
	CN1901	VS1-5256-012 000	C	1 CONNECTOR 12P	
	CN2101	VS1-1169-020 000	C	1 CONNECTOR 20P	
	CN2102	VS1-5108-010 000	C	1 CONNECTOR 10P	
	CN2103	VS1-5184-020 000	C	1 CONNECTOR 20P	
	CN2104	VS1-5184-020 000	C	1 CONNECTOR 20P	
	CN2301	VS1-5106-020 000	C	1 CONNECTOR 20P	
	CN2302	VS1-5106-020 000	C	1 CONNECTOR 20P	
	CN2303	VS1-5108-014 000	C	1 CONNECTOR 14P	
	CN2304	VS1-5108-014 000	C	1 CONNECTOR 14P	
	CN2502	VS1-1021-008 000	C	1 CONNECTOR 8P	
	CN2503	VS1-5106-014 000	C	1 CONNECTOR 14P	
	CN2504	VS1-5106-010 000	C	1 CONNECTOR 10P	
D001	WA1-1146-000 000	B	1	DIODE MA707	
D004	WA1-1084-000 000	B	1	DIODE MA110	
D005	WA1-0962-000 000	B	1	DIODE MA121	
D006	WA1-0617-000 000	B	1	ZENER DIODE, MA3100	
D100	WA1-1084-000 000	B	1	DIODE MA110	
D101	WA1-5080-000 000	B	1	DIODE EC10QS03	
D102	WA1-5080-000 000	B	1	DIODE EC10QS03	
D103	WA1-1084-000 000	B	1	DIODE MA110	
D302	WA1-1084-000 000	B	1	DIODE MA110	
D303	WA1-1084-000 000	B	1	DIODE MA110	
D304	WA1-1084-000 000	B	1	DIODE MA110	
D305	WA1-1164-000 000	B	1	DIODE DAN202U	
D306	WA1-1084-000 000	B	1	DIODE MA110	
D307	WA1-1084-000 000	B	1	DIODE MA110	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
D308	WA1-1084-000 000	B	1	DIODE MA110	
D309	WA1-1084-000 000	B	1	DIODE MA110	
D310	WA1-1084-000 000	B	1	DIODE MA110	
D1601	WA1-1084-000 000	B	1	DIODE MA110	
D1602	WA1-1084-000 000	B	1	DIODE MA110	
D1603	WA1-1084-000 000	B	1	DIODE MA110	
D1604	WA1-1164-000 000	B	1	DIODE DAN202U	
D1605	WA1-1084-000 000	B	1	DIODE MA110	
D1701	WA1-1084-000 000	B	1	DIODE MA110	
D2501	WA1-5061-000 000	B	1	DIODE DAP202U	
D2502	WA1-1084-000 000	B	1	DIODE MA110	
D2503	WA1-1149-000 000	B	1	CHIP DIODE, 1SS250	
D2504	WA1-1149-000 000	B	1	CHIP DIODE, 1SS250	
D2505	WA1-0963-000 000	B	1	DIODE, ZENER MA3A100	
D2506	WA1-0963-000 000	B	1	DIODE, ZENER MA3A100	
D2901	WA1-0989-000 000	B	1	DIODE, ZENER MA3100W	
D2902	WA1-1084-000 000	B	1	DIODE MA110	
D2903	WA1-1084-000 000	B	1	DIODE MA110	
D2904	WA1-1123-000 000	B	1	DIODE AG01Z	
IC001	DH4-0641-001 000	B	1	IC ATT75312GF-247	
IC002	WA3-7051-000 000	B	1	IC S8420AF	
IC003	WA3-5455-000 000	B	1	IC SC7SU04F	
IC004	WA3-5455-000 000	B	1	IC SC7SU04F	
IC100	DH4-0318-000 000	B	1	IC CAX1127AM	
IC101	WA4-5919-000 000	B	1	IC CXA8006BM	
IC102	WA4-5161-000 000	B	1	IC CXA1512M	
IC103	WA3-6755-000 000	B	1	IC MC74HC165FL2	
IC104	DH4-0613-001 000	B	1	IC CXP80620-135Q	
IC201	DH4-0514-000 000	B	1	IC CXA1207AR	
IC202	DH4-0264-000 000	B	1	IC CXA1208R	
IC204	DH4-0297-000 000	B	1	IC CXL1506	
IC205	DH4-0297-000 000	B	1	IC CXL1506	
IC206	DH4-0411-000 000	B	1	IC MM1058XF	
IC207	WA4-5406-000 000	B	1	IC NJM2284M	
IC208	WA4-5476-000 000	B	1	IC NJM2508M	
IC212	DH4-0539-000 000	B	1	IC μ PD6456GS-102	
IC213	DH4-0539-000 000	B	1	IC μ PD6456GS-102	
IC214	WA4-5476-000 000	B	1	IC NJM2508M	
IC215	WA3-5156-000 000	B	1	IC TC74HC32AF	
IC301	WA4-5437-000 000	B	1	IC LVC556FA2	
IC303	DH4-0508-000 000	B	1	IC MM1024AF	
IC1501	WA4-5437-000 000	B	1	IC LVC556FA2	
IC1502	DH4-0327-000 000	B	1	IC CXD1171M	
IC1503	DH4-0322-000 000	B	1	IC CXD1175AM	
IC1504	WA4-1332-000 000	B	1	IC NJM2406F	
IC1505	DH4-0321-000 000	B	1	IC CXD1172AM	
IC1506	DH4-0325-000 000	B	1	IC CF38403PJ	
IC1507	DH4-0326-000 000	B	1	IC CF78125PJ	
IC1508	WA3-5548-000 000	B	1	IC TMS4C1050-40DJ	
IC1509	DH4-0526-000 000	B	1	IC CF45010DW	
IC1510	WA3-5201-000 000	B	1	IC MN3106S	
IC1601	DH4-0614-000 000	B	1	IC CXP81316-337Q	
IC1602	WA4-5437-000 000	B	1	IC LVC556FA2	
IC1603	WA3-6860-000 000	B	1	IC NM93C06EM8	
IC1604	WA4-5470-000 000	B	1	IC TLL1596CDB	
IC1605	WA4-1145-000 000	B	1	IC RH5VA45AA	
IC1606	WA4-5422-000 000	B	1	IC S-81350HG	
IC1607	WA4-1145-000 000	B	1	IC RH5VA45AA	
IC1701	WA4-5557-000 000	B	1	IC CX20102	
IC1702	WA4-5164-000 000	B	1	IC μ PC393G2	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
IC1703	WA3-6393-000 000	B	1	IC CXD2120Q	
IC2501	DH4-0281-000 000	B	1	IC LD5077	
IC2502	WA3-5323-000 000	B	1	IC MB625184UPF	
IC2503	DH4-0314-000 000	B	1	IC M37450M4-502FP	
IC2504	WA3-4264-000 000	B	1	IC SC14S66F	
IC2505	WA4-1293-000 000	B	1	IC PST529CMT	
IC2506	WA3-3965-000 000	B	1	IC SN74HC05NS	
IC2507	WA4-5213-000 000	B	1	IC RH5RE50AA	
IC2508	WA3-4264-000 000	B	1	IC SC14S66F	
IC2509	WA4-1172-000 000	B	1	IC NJM3415M	
IC2510	WA3-5173-000 000	B	1	IC SC7S00F	
IC2511	WA3-5173-000 000	B	1	IC SC7S00F	
IC2512	WA3-5173-000 000	B	1	IC SC7S00F	
IC2513	WA3-4264-000 000	B	1	IC SC14S66F	
IC2514	WA3-5678-000 000	B	1	IC MC74HC164FL2	
IC2515	WA3-4264-000 000	B	1	IC SC14S66F	
IC2516	WA3-4264-000 000	B	1	IC SC14S66F	
IC2517	WA3-5678-000 000	B	1	IC MC74HC164FL2	
IC2901	WA4-1322-000 000	B	1	IC AN2514S	
IC2931	DH4-0205-000 000	B	1	IC LVC556F-2	
△	L1201	DH9-0405-000 000	C	1 COIL, FERRITE 2μH	
	L2902	DH9-0512-000 000	D	1 COIL, 210μH	
	LED2941	WG1-0417-000 000	B	1 LED SLH-56VT14F	
	Q001	WA2-1400-000 000	B	1 TRANSISTOR 2SA1576	
	Q002	WA2-5588-000 000	B	1 TRANSISTOR XDIMB6	
Q004	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q005	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q100	WA2-5122-000 000	B	1	TRANSISTOR FC101	
Q101	WA2-5587-000 000	B	1	TRANSISTOR XDIMD2	
Q102	WA2-0797-000 201	B	1	TRANSISTOR 2SA1213	
Q103	WA2-5589-000 000	B	1	TRANSISTOR XDIMH6	
Q104	WA2-5595-000 000	B	1	TRANSISTOR XDC144EE	
Q105	WA2-5590-000 000	B	1	TRANSISTOR XDIMH8	
Q106	WA2-5669-000 000	B	1	TRANSISTOR XDC114TE	
Q107	WA2-5590-000 000	B	1	TRANSISTOR XDIMH8	
Q108	WA2-5595-000 000	B	1	TRANSISTOR XDC144EE	
Q109	WA2-0797-000 201	B	1	TRANSISTOR 2SA1213	
Q110	WA2-5600-000 000	B	1	TRANSISTOR XDC114EE	
Q201	WA2-5590-000 000	B	1	TRANSISTOR XDIMH8	
Q203	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q204	WA2-5589-000 000	B	1	TRANSISTOR XDIMH6	
Q205	WA2-5612-000 000	B	1	TRANSISTOR XDA144EU	
Q206	WA2-5347-000 000	B	1	TRANSISTOR RN2427	
Q207	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q208	WA2-5589-000 000	B	1	TRANSISTOR XDIMH6	
Q209	WA2-5589-000 000	B	1	TRANSISTOR XDIMH6	
Q210	WA2-5612-000 000	B	1	TRANSISTOR XDA144EU	
Q211	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q212	WA2-5589-000 000	B	1	TRANSISTOR XDIMH6	
Q213	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q214	WA2-5606-000 000	B	1	TRANSISTOR 2SA1576	
Q254	WA2-1440-000 000	B	1	TRANSISTOR 2SA1576	
Q255	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q256	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q257	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q302	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q303	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q305	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q308	WA2-5092-000 000	B	1	TRANSISTOR IMX5	
Q313	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q315	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q316	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q317	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q318	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q321	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q323	WA2-5629-000 000	B	1	TRANSISTOR XDIMB5	
Q324	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q326	WA2-1405-000 000	B	1	TRANSISTOR DTA124EU	
Q327	WA2-5587-000 000	B	1	TRANSISTOR XDIMD2	
Q328	WA2-5587-000 000	B	1	TRANSISTOR XDIMD2	
Q333	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q334	WA2-5608-000 000	B	1	TRANSISTOR XDIMH5	
Q336	WA2-5149-000 000	B	1	TRANSISTOR 2SB1412F5	
Q337	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	
Q338	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q340	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q344	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q346	WA2-5594-000 000	B	1	TRANSISTOR XDC124EU	
Q348	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q351	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q353	WA2-1405-000 000	B	1	TRANSISTOR XDA124EU	
Q360	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q361	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q370	WA2-5608-000 000	B	1	TRANSISTOR XDIMH5	
Q377	WA2-5587-000 000	B	1	TRANSISTOR XDIMD2	
Q378	WA2-5587-000 000	B	1	TRANSISTOR XDIMD2	
Q380	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q381	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q382	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q383	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q385	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q386	WA2-5587-000 000	B	1	TRANSISTOR XDIMD2	
Q387	WA2-5589-000 000	B	1	TRANSISTOR XDIMH6	
Q388	WA2-5168-000 000	B	1	FET, 2SK879	
Q389	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q390	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q391	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q392	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q393	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q395	WA2-1405-000 000	B	1	TRANSISTOR DTA124EU	
Q396	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q397	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q450	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q1501	WA2-5149-000 000	B	1	TRANSISTOR 2SB1412F5	
Q1502	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1503	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1504	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q1505	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q1506	WA2-1228-000 000	B	1	TRANSISTOR IMT2	
Q1507	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q1508	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1509	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1510	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1511	WA2-1232-000 000	B	1	TRANSISTOR IMZ1	
Q1512	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1513	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q1514	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1515	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1517	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1518	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q1601	WA2-5590-000 000	B	1	TRANSISTOR XDIMH8	
Q1602	WA2-5595-000 000	B	1	TRANSISTOR XDC144EE	
Q1604	WA2-0797-000 201	B	1	TRANSISTOR 2SA1213	
Q1608	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1609	WA2-5595-000 000	B	1	TRANSISTOR XDC144EE	
Q1611	WA2-5669-000 000	B	1	TRANSISTOR XDC114TE	
Q1613	WA2-5614-000 000	B	1	TRANSISTOR XDC143EU	
Q1614	WA2-5591-000 000	B	1	TRANSISTOR XDA124EE	
Q1615	WA2-5590-000 000	B	1	TRANSISTOR XDIMH8	
Q1616	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q1617	WA2-5590-000 000	B	1	TRANSISTOR XDIMH8	
Q1618	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q1701	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q1702	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1703	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1704	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q1705	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1706	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1707	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1708	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1709	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1710	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q1711	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1712	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1713	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1714	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1715	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q1716	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q1717	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2501	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2502	WA2-1234-000 000	B	1	TRANSISTOR IMX2	
Q2503	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q2504	WA2-5152-000 000	B	1	TRANSISTOR 2SB1424	
Q2505	WA2-5615-000 000	B	1	TRANSISTOR XDC144EU	
Q2506	WA2-1351-000 000	B	1	TRANSISTOR IMD6	
Q2507	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q2508	WA2-1398-000 000	B	1	TRANSISTOR 2SA1255	
Q2509	WA2-1381-000 000	B	1	TRANSISTOR 2SC3138	
Q2510	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q2901	WA2-0839-000 000	B	1	TRANSISTOR 2SA1226	
▲ Q2902	WA2-0393-000 201	B	1	TRANSISTOR 2SA1162	
▲ Q2903	WA2-0393-000 201	B	1	TRANSISTOR 2SA1162	
▲ Q2904	WA2-5151-000 000	B	1	TRANSISTOR 2SD968A-S	
▲ Q2931	WA2-0797-000 201	B	1	TRANSISTOR 2SA1213	
RE701	DH9-0572-000 000	C	1	ROTARY ENCODER	
▲ RR801	DH4-0144-000 000	D	1	LINK, IC ICP-F25	
▲ RR1201	WD8-5020-000 000	D	1	LINK, IC DCT2000	
▲ RR1202	WD8-5020-000 000	D	1	LINK, IC DCT2000	
▲ RR1203	WD8-5020-000 000	D	1	LINK, IC DCT2000	
▲ RR2901	DH4-0141-000 000	D	1	LINK, IC ICP-N15	
RU2941	DH9-0489-000 000	C	1	REMOCON MODULE	
TC201	VC7-5750-300 000	C	1	CAPACITOR, TRIMMER 30pF	
TC202	VC7-5750-300 000	C	1	CAPACITOR, TRIMMER 30pF	
TH2901	WA8-0195-000 000	C	1	THERMISTER	
T2501	DH6-0258-000 000	C	1	TRANSFORMER	
▲ T2901	DH9-0513-000 000	D	1	FLYBACK TRANSFORMER	
VC201	VC7-5750-300 000	C	1	CAPACITOR, TRIMMER 30pF	
VC2101	VC6-3670-100 000	C	1	CAPACITOR, TRIMMER 10pF	
VC2102	VC6-3670-100 000	C	1	CAPACITOR, TRIMMER 10pF	
VC2103	VC6-3670-300 000	C	1	CAPACITOR, TRIMMER 30pF	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
VC2501	VC7-5750-300 000	C	1	CAPACITOR, TRIMMER 30pF	
VL301	DH6-0348-000 000	C	1	INDUCTOR, VARIABLE	
VOL1301	VR9-5031-000 000	C	1	RESISTOR, VARIABLE 5KΩ	
VR051	VR9-5080-000 000	C	1	RESISTOR, VARIABLE 1.5KΩ	
VR202	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	
VR203	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	
VR204	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR206	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
VR207	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
VR208	VR5-7780-472 000	C	1	RESISTOR, VARIABLE 4.7KΩ	
VR210	VR5-7780-102 000	C	1	RESISTOR, VARIABLE 1KΩ	
VR302	VR5-7780-222 000	C	1	RESISTOR, VARIABLE 2.2KΩ	
VR303	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	
VR304	VR5-7780-222 000	C	1	RESISTOR, VARIABLE 2.2KΩ	
VR305	VR5-7780-222 000	C	1	RESISTOR, VARIABLE 2.2KΩ	
VR306	VR5-7780-471 000	C	1	RESISTOR, VARIABLE 47Ω	
VR308	VR5-7780-471 000	C	1	RESISTOR, VARIABLE 47Ω	
VR309	VR5-7780-471 000	C	1	RESISTOR, VARIABLE 47Ω	
VR310	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR1502	VR5-7780-222 000	C	1	RESISTOR, VARIABLE 2.2KΩ	
VR1503	VR5-7780-221 000	C	1	RESISTOR, VARIABLE 220Ω	
VR1504	VR5-7780-332 000	C	1	RESISTOR, VARIABLE 3.3KΩ	
VR1601	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
VR1701	VR5-7780-222 000	C	1	RESISTOR, VARIABLE 2.2KΩ	
VR2301	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2302	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2305	VR5-7780-104 000	C	1	RESISTOR, VARIABLE 100KΩ	
VR2306	VR5-7780-104 000	C	1	RESISTOR, VARIABLE 100KΩ	
VR2307	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2308	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2309	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2310	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2311	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2312	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2313	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	
VR2314	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2315	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	
VR2316	VR5-7780-473 000	C	1	RESISTOR, VARIABLE 47KΩ	
VR2317	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2318	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2501	VR5-7780-103 000	C	1	RESISTOR, VARIABLE 10KΩ	
VR2502	VR5-7780-223 000	C	1	RESISTOR, VARIABLE 22KΩ	
VR2503	VR5-7780-104 000	C	1	RESISTOR, VARIABLE 100KΩ	
VR2901	VR5-7680-201 000	C	1	RESISTOR, VARIABLE 200Ω	
VR2902	VR5-7680-503 000	C	1	RESISTOR, VARIABLE 50KΩ	
△ VR2903	VR7-0380-205 000	C	1	RESISTOR, VARIABLE 2MΩ/200V	
△ VR2904	VR7-0710-504 000	C	1	RESISTOR, VARIABLE 500KΩ/100V	
X001	WK2-0254-000 000	B	1	OSCILLATOR, CRYSTAL (4.19MHz)	
X100	WK2-5160-000 000	C	1	OSCILLATOR, CRYSTAL (12MHz)	
X201	DH9-0618-000 000	C	1	OSCILLATOR, QUARTZ (4.43MHz)	
X1601	WK2-5117-000 000	C	1	OSCILLATOR, CRYSTAL (8MHz)	
X1701	DH9-0636-000 000	C	1	OSCILLATOR, CRYSTAL (11.58MHz)	
X2101	DH9-0542-000 000	C	1	OSCILLATOR, CRYSTAL (28MHz)	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
6	DAL-1677-000 000	B	1	PLATE, COVER	
6	DAL-1864-000 000	B	1	RING, RUBBER	
6	DAL-2164-000 000	C	1	MASK, CRT	
2	DAL-2211-000 000	C	1	SHAFT	
6	DAL-3752-000 000	C	1	HOLDER (2), RECORDER	
6	DAL-3754-000 000	C	1	HOLDER (4), RECORDER	
6	DAL-3755-000 000	F	3	SCREW, CROSS-RECESS	
6	DAL-3756-000 000	C	1	PLATE, GROUND	
6	DAL-3762-000 000	C	1	TERMINAL (1), LITHIUM BATTERY	
6	DAL-3763-000 000	C	1	TERMINAL (2), LITHIUM BATTERY	
6	DAL-3764-000 000	C	1	HOLDER, P.C.B.	
6	DAL-3765-000 000	C	3	MECHA. DAMPER	
6	DAL-3857-000 000	B	1	SLIDE SWITCH, E.V.F.	
14	DAL-4051-000 000	C	1	EYE CUP	
14	DAL-4054-000 000	C	1	MASK, EYEPiece	
4	DAL-4276-000 000	C	1	BASE, CAMERA	
4	DAL-4279-000 000	C	1	RING, ADJUST	
4	DAL-4285-000 000	B	1	MOUNT, CAMERA	
4	DAL-4286-000 000	C	1	SPRING, MOUNT	
4	DAL-4287-000 000	C	1	LOCK PIN, CAMERA	
4	DAL-4288-000 000	C	1	LOCK LEVER, CAMERA	
4	DAL-4289-000 000	C	1	GUIDE, LEVER	
4	DAL-4290-000 000	C	1	HOLD, LEVER	
4	DAL-4293-000 000	C	1	SWITCH LEVER	
4	DAL-4294-000 000	C	1	HOLDER (1), CAMERA	
4	DAL-4295-000 000	C	1	HOLDER (2), CAMERA	
4	DAL-4296-000 000	C	1	HOLDER, CAMERA-KEY (2)	
4	DAL-4300-000 000	C	1	SCREW, CROSS-RECESS	
2	DAL-4316-000 000	B	1	KNOB, EDIT	
2	DAL-4319-000 000	B	1	KNOB, EJECT	
2	DAL-4321-000 000	B	1	KNOB, LENS EJECT	
2	DAL-4322-000 000	B	1	KNOB, IRIS	
2	DAL-4323-000 000	B	1	VOLUME, KNOB, HEADPHONE	
2	DAL-4329-000 000	B	1	KNOB, BATTERY	
2	DAL-4330-000 000	C	1	HOOK, BATTERY	
2	DAL-4331-000 000	C	1	LEVER, BATTERY	
2	DAL-4336-000 000	C	1	SHAFT	
2	DAL-4337-000 000	C	1	HOLDER, JACK	
6	DAL-4338-000 000	C	1	HOLDER (1), RECORDER	
2	DAL-4342-000 000	B	1	BUTTON, ATTENATOR	
2	DAL-4344-000 000	A	2	SEAL	
2	DAL-4345-000 000	B	1	CAP, CAMERA	
2	DAL-4346-000 000	C	1	COVER, LITHIUM BATTERY	
2	DAL-4350-000 000	C	1	HOLDER, GRIP COVER (B)	
2	DAL-4353-000 000	B	1	SEAL	
4	DAL-4356-000 000	C	1	SEAL, RUBBER	
2	DAL-4372-000 000	B	1	COVER (B), GRIP	
2	DAL-4394-000 000	C	1	CUSHION, IRIS	
2	DAL-4397-000 000	C	1	SPRING, PLATE	
2	DAL-4400-000 000	C	1	PLATE	
2	DAL-4494-000 000	B	1	DAMPER (1)	
2	DAL-4495-000 000	B	1	DAMPER (2)	
2	DAL-4496-000 000	F	4	SCREW, CROSS-RECESS	
2	DAL-4499-000 000	B	2	SHOE, ACCESSORY	
2	DAL-4500-000 000	B	2	SHEET, ACCESSORY SHOE	
2	DAL-5355-000 000	F	1	SCREW, CROSS-RECESS	
2	DAL-5357-000 000	B	1	KNOB, CAMERA MODE	
4	DAL-5359-000 000	C	1	HOLDER, PLATE	
2	DAL-5491-000 000	C	1	SHEET	
2	DAL-5697-000 000	B	1	COVER, JACK	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
2	DAL-5698-000 000	B	1	COVER (A), GRIP	
6	DF1-0541-000 000	C	1	PRINTED CORD ASS'Y	
6	DF1-0778-000 000	C	1	PRINTED CORD ASS'Y	
2	DF1-0874-000 000	B	1	BUTTON, TRIGGER	
6	DF1-1010-000 000	C	1	HOLDER (3), RECORDER	
2	DF1-1223-000 000	B	1	COVER, FRONT	
2	DF1-1226-000 000	B	1	COVER, CASSETTE	
2	DG1-1196-000 000	B	1	ZOOM SWITCH (2)	
6	DG1-1381-000 000	C	1	RECORDER KEY (2) P.C.B.	
6	DG1-1382-000 000	C	1	HEAD PHONE P.C.B.	
2	DG1-1384-000 000	C	1	MIC P.C.B.	
2	DG1-1391-000 000	B	1	COVER, REAR	
4	DG1-1404-000 000	C	1	CAMERA KEY (2) P.C.B.	
2	DG1-1412-010 000	C	1	FUSE BATTERY P.C.B.	
6	DG1-2225-000 000	C	1	TERMINAL P.C.B.	
4	DG1-2230-000 000	C	1	CAMERA KEY (1) P.C.B.	
6	DG1-2235-000 000	C	1	VIDEO SUB P.C.B.	
6	DG1-2262-000 000	C	1	VIDEO P.C.B.	
6	DG1-2263-000 000	C	1	SYS CON SERVO P.C.B.	
6	DG1-2264-000 000	C	1	RECORDER KEY (1) P.C.B.	
4	DG1-2266-000 000	C	1	PROCESS (1) P.C.B.	
4	DG1-2267-000 000	C	1	PROCESS (2) P.C.B.	
4	DG1-2268-000 000	C	1	AF P.C.B.	
2	DG1-2269-000 000	B	1	RIGHT COVER ASS'Y	
2	DG1-2270-000 000	B	1	LEFT COVER ASS'Y	
6	DH2-1250-000 000	C	1	CONNECTOR 11P	
6	DH2-1301-000 000	C	1	PRINTED CORD	
6	DH2-1304-000 000	C	1	PRINTED CORD	
6	DH2-1305-000 000	C	1	PRINTED CORD	
6	DH2-1306-000 000	C	1	PRINTED CORD	
6	DH2-1307-000 000	C	1	PRINTED CORD	
6	DH2-1308-000 000	C	1	PRINTED CORD	
6	DH2-1309-000 000	C	1	PRINTED CORD	
6	DH2-1318-000 000	C	1	PRINTED CORD	
	DH2-1391-000 000	C	1	CONNECTOR CABLE ASS'Y	
	DH2-1392-000 000	C	1	CONNECTOR CABLE ASS'Y	
	DH2-1398-000 000	C	1	CONNECTOR ASS'Y, 7P	
6	DH2-1541-000 000	C	1	PRINTED CORD	
6	DH2-1547-000 000	C	1	PRINTED CORD	
4	DH2-1549-000 000	C	1	FPC, CCD ASS'Y	
4	DH3-0017-000 000	C	1	DC/DC CONVERTER	
	DH4-0141-000 000	D	1	LINK, IC ICP-N15	
	DH4-0144-000 000	D	1	LINK, IC ICP-F25	
	DH4-0205-000 000	B	1	IC LVC556F-2	
	DH4-0264-000 000	B	1	IC CXA1208R	
4	DH4-0272-000 000	C	1	MATRIX P.C.B.	
	DH4-0281-000 000	B	1	IC LD5077	
	DH4-0297-000 000	B	2	IC CXL11506	
6	DH4-0301-000 000	B	1	JOG P.C.B.	
	DH4-0314-000 000	B	1	IC M37450M4-502FP	
	DH4-0318-000 000	B	1	IC CXA1127AM	
	DH4-0321-000 000	B	1	IC CXD1172AM	
	DH4-0322-000 000	B	1	IC CXD1175AM	
	DH4-0325-000 000	B	1	IC CF38403PJ	
	DH4-0326-000 000	B	1	IC CF78125PJ	
	DH4-0327-000 000	B	1	IC CXD1171M	
	DH4-0411-000 000	B	1	IC MM1058XF	
	DH4-0508-000 000	B	1	IC MM1024AF	
	DH4-0514-000 000	B	1	IC CXA1207AR	
	DH4-0526-000 000	B	1	IC CF45010DW	

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PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
4	DH4-0539-000 000	B	2	IC uPD6456GS-102	
	DH4-0603-000 000	C	1	ENCODER P.C.B.	
	DH4-0613-001 000	B	1	IC CXF8062C-135Q	
	DH4-0614-000 000	B	1	IC CXF81316-337Q	
	DH4-0641-001 000	B	1	IC ATT75312GF-247	
△	DH6-0258-000 000	C	1	TRANSFORMER	
	DH6-0348-000 000	C	1	INDUCTOR, VARIABLE	
	DH9-0405-000 000	C	1	COIL, FERRITE 2μH	
	DH9-0489-000 000	C	1	REMOCON MODULE	
	DH9-0512-000 000	D	1	COIL, 210μH	
△	DH9-0513-000 000	D	1	FLYBACK TRANSFORMER	
	DH9-0515-000 000	C	1	ACTUATOR	
	DH9-0527-000 000	B	1	MICROPHONE	
	DH9-0537-000 000	C	1	CRYSTAL FILTER	
	DH9-0542-000 000	C	1	OSCILLATOR, CRYSTAL (28MHz)	
2	DH9-0572-000 000	C	1	ROTARY ENCODER	
	DH9-0618-000 000	C	1	OSCILLATOR, QUARTZ (4.43MHz)	
	DH9-0636-000 000	C	1	OSCILLATOR, CRYSTAL (11.58MHz)	
	DS1-5182-000 000	C	1	SPRING, COIL	
	DS1-5235-000 000	C	3	SPRING, COIL	
4	DS1-5236-000 000	C	1	SPRING, COIL (1)	
	DS1-5238-000 000	C	1	SPRING, COIL (3)	
	DS1-6075-000 000	C	1	SPRING, COIL	
	DY1-7210-000 000	H	1	COVER, TRIGER SWITCH	
	DY1-7264-000 000	C	1	AUDIO (1) P.C.B.	
2	DY1-7265-000 000	C	1	AUDIO (2) P.C.B.	
	DY1-7317-000 000	B	1	KNOB, AUDIO VOLUME (R)	
	DY1-7318-000 000	B	1	KNOB, AUDIO VOLUME (L)	
	DY1-7503-000 000	B	1	CONTACT ASS'Y	
	DY1-7504-000 000	B	1	BOTTOM COVER, E.V.F.	
14	DY1-7505-000 000	C	1	LCD ASS'Y	
	DY1-7514-000 000	C	1	CCD ASS'Y	
	DY1-7515-000 000	B	1	TOP COVER ASS'Y	
	DY1-7516-000 000	B	1	WIRELESS REMOTE CONTROLLER WL-1000E	
	DY2-1223-000 000	E	1	SPORTS FINDER SF-200	
14	DY2-1288-000 000	B	1	TOP COVER, E.V.F.	
	DY2-1291-000 000	C	1	CRT ASS'Y	
	DY2-1316-000 000	C	1	E.V.F. P.C.B.	
	DY2-1347-000 000	B	1	COUPLER, DC-100	
	DY2-1352-000 000	B	1	ZOOM SWITCH (1)	
10,12	DY2-1362-000 000	H	1	GRIP COVER	
	DY4-2440-000 000	F	3	WASHER	
	DY4-2527-000 000	F	1	WASHER	
	DY4-2648-000 000	C	1	COASTER, LEFT	
	DY4-2649-000 000	C	1	COASTER, RIGHT	
12	DY4-2650-000 000	C	1	GEAR ASS'Y	
	DY4-2656-000 000	C	1	GEAR, JOINT	
	DY4-2659-000 000	C	1	BRAKE, TS	
	DY4-2660-000 000	C	1	BAND, TENSION	
	DY4-2662-000 000	C	1	ROLLER, GUIDE	
10	DY4-2663-000 000	C	1	REEL, SUPPLY	
	DY4-2664-000 000	C	1	ARM, TG7	
	DY4-2665-000 000	C	1	ARM, PINCH SUB	
	DY4-2666-000 000	C	1	REEL, TAKE UP	
	DY4-2669-000 000	C	1	ARM	
8	DY4-2672-000 000	C	1	PLATE, SS	
	DY4-2673-000 000	C	1	CASSETTE COMPARTMENT ASS'Y	
	DY4-2674-000 000	C	1	ROLLER, GUIDE	
	DY4-2675-000 000	C	1	TERMINAL, EARTH	
	DY4-2676-000 000	C	1	SWITCH	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
10	DY4-2678-000 000	C	1	SWITCH, PUSH	
10	DY4-2679-000 000	C	1	FLEXIBLE P.C.B. (1)	
10	DY4-2680-000 000	C	1	FLEXIBLE P.C.B. (2)	
10,12	DY4-2681-000 000	F	4	WASHER	
12	DY4-2684-000 000	C	1	PLATE, TT	
12	DY4-2685-000 000	C	2	SPRING, LEAF	
12	DY4-2686-000 000	F	2	SCREW, CROSS-RECESS	
10,12	DY4-2688-000 000	F	6	WASHER	
12	DY4-2689-000 000	F	2	SCREW, CROSS-RECESS	
10	DY4-2690-000 000	C	1	PLATE, TL	
10	DY4-2691-000 000	C	1	BRAKE, LB	
10	DY4-2692-000 000	C	1	LEVER, LB	
12	DY4-2693-000 000	C	1	ARM, RELEASE	
12	DY4-2694-000 000	C	1	GEAR, UL	
12	DY4-2695-000 000	C	1	ARM, UL	
10	DY4-2696-000 000	C	4	PIN, SHAFT	
10	DY4-2697-000 000	C	1	SPRING, COIL	
12	DY4-2698-000 000	C	1	SPRING, COIL	
10	DY4-2699-000 000	C	1	SPRING, COIL	
12	DY4-2700-000 000	C	1	SPRING	
10	DY4-2701-000 000	C	1	FLANGE, TG2	
10	DY4-2702-000 000	C	1	ROLLER, TG2	
10	DY4-2703-000 000	C	1	FLANGE, TG2	
10	DY4-2704-000 000	C	1	SLEEVE, TG2	
10	DY4-2705-000 000	C	1	SPRING, COIL	
12	DY4-2706-000 000	C	1	SPRING, COIL	
10	DY4-2707-000 000	C	1	SPRING, PLATE	
8	DY4-2708-000 000	C	1	SPRING, COIL	
10	DY4-2710-000 000	C	1	HOLDER, LED	
12	DY4-2711-000 000	C	1	LEVER, EJECT	
10	DY4-2712-000 000	C	1	ARM, RELEASE	
10	DY4-2713-000 000	C	1	BRAKE, S	
10	DY4-2714-000 000	C	1	BRAKE, T	
12	DY4-2715-000 000	C	1	BRAKE, UL	
10	DY4-2716-000 000	C	1	ARM, STOPPER	
10	DY4-2717-000 000	C	1	ARM, ADJUST	
12	DY4-2719-000 000	E	1	BELT(S), TIMING	
8	DY4-2720-000 000	C	1	DAMPER, OIL	
8	DY4-2721-000 000	C	1	GUARD, GUIDE	
10	DY4-2722-000 000	C	2	HOLDER, SENSOR	
10	DY4-2723-000 000	C	1	STOPPER, RK	
10	DY4-2724-000 000	C	1	SPRING, COIL	
10	DY4-2725-000 000	C	1	PLATE, SWITCH	
8	DY4-2726-000 000	C	1	CAPSTAN MOTOR	
8,10	DY4-2727-000 000	F	9	SCREW, CROSS-RECESS	
8,10,12	DY4-2728-000 000	F	7	SCREW, CROSS-RECESS	
8	DY4-2729-000 000	C	2	TAPE	
8	DY4-2730-000 000	F	5	SCREW, CROSS-RECESS	
12	DY4-2742-000 000	C	1	GEAR	
12	DY4-2743-000 000	C	1	GEAR	
8	DY4-2910-000 000	C	1	ROLLER ASS'Y	
8	DY4-2911-000 000	C	1	LOADING MOTOR ASS'Y	
10	DY4-2912-000 000	C	1	ARM, PINCH	
10	DY4-2914-000 000	C	1	STOPPER	
12	DY4-2915-000 000	C	1	GEAR, RC	
10	DY4-2917-000 000	C	1	LEVER, SWITCH	
12	DY4-2918-000 000	C	1	GEAR, RK	
12	DY4-2919-000 000	C	1	WORM ASS'Y	
8	DY4-2920-000 000	C	1	CONNECTOR 13P	
10	DY4-2921-000 000	C	1	SWITCH, SLIDE	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
12	DY4-2922-000 000	C	1	PULLEY, RELAY B	
12	DY4-2923-000 000	C	1	BELT(L), TIMING	
12	DY4-2924-000 000	C	1	GEAR, WHEEL	
8	DY4-2925-000 000	C	1	HOLDER	
8	DY4-2936-000 000	E	1	DRUM ASS'Y	
8	DY4-2937-000 000	E	1	UPPER DRUM ASS'Y	
14	DY4-2962-000 000	C	1	SHOE, ACCESSORY	
14	DY4-2963-000 000	B	1	CORD, CURLED W/PLUG	ZM-100 ONLY
14	DY4-2964-010 000	B	1	WIND SCREEN	
14	DY4-2965-000 000	F	1	SCREW, CROSS-RECESS	
14	DY4-2966-000 000	F	4	SCREW, CROSS-RECESS	
14	DY4-2967-000 000	F	1	SCREW, CROSS-RECESS	
14	DY4-2968-000 000	B	1	CORD, STRAIGHT W/PLUG	
14	DY4-2969-000 000	B	1	PLATE, NAME	
14	DY4-2970-000 000	B	1	PLATE, NAME	
14	DY4-2971-000 000	B	1	KNOB	
14	DY4-2972-000 000	B	1	KNOB	
14	DY4-2973-000 000	B	1	HOLDER, MIC	
14	DY4-2974-000 000	B	1	COVER, REAR	
14	DY4-2975-000 000	B	1	COVER, RIGHT	
14	DY4-2976-000 000	B	1	COVER, LEFT	
14	DY4-2977-000 000	B	1	COVER, TOP	
12	DY4-3004-000 000	C	1	PULLEY, RELAY A	
8	DY4-3091-000 000	C	1	HEAD AMP ASS'Y	
14	DY4-4386-000 000	C	1	KEY, HARD CASE	
					
VC6-3670-100 000	C	2		CAPACITOR, TRIMMER 10pF	
VC6-3670-300 000	C	1		CAPACITOR, TRIMMER 30pF	
VC6-4130-106 000	D	1		CAPACITOR, AL/EL 10μF/16V	
VC7-1360-102 000	D	1		CAPACITOR, CERA 1000pF/1KV	
VC7-1380-152 000	D	1		CAPACITOR, CERA 1500pF/500V	
VC7-5750-300 000	C	4		CAPACITOR, TRIMMER 30pF	
VR5-7680-201 000	C	1		RESISTOR, VARIABLE 200Ω	
VR5-7680-503 000	C	1		RESISTOR, VARIABLE 50KΩ	
VR5-7780-102 000	C	1		RESISTOR, VARIABLE 1KΩ	
VR5-7780-103 000	C	2		RESISTOR, VARIABLE 10KΩ	
VR5-7780-104 000	C	3		RESISTOR, VARIABLE 100KΩ	
VR5-7780-221 000	C	1		RESISTOR, VARIABLE 220Ω	
VR5-7780-222 000	C	5		RESISTOR, VARIABLE 2.2KΩ	
VR5-7780-223 000	C	14		RESISTOR, VARIABLE 22KΩ	
VR5-7780-332 000	C	1		RESISTOR, VARIABLE 3.3KΩ	
					
VR5-7780-471 000	C	3		RESISTOR, VARIABLE 470Ω	
VR5-7780-472 000	C	3		RESISTOR, VARIABLE 4.7KΩ	
VR5-7780-473 000	C	6		RESISTOR, VARIABLE 47KΩ	
VR7-0380-205 000	C	1		RESISTOR, VARIABLE 2MΩ/200V	
VR7-0710-504 000	C	1		RESISTOR, VARIABLE 500KΩ/100V	
VR9-5031-000 000	C	1		RESISTOR, VARIABLE 5KΩ	
VR9-5080-000 000	C	1		RESISTOR, VARIABLE 1.5KΩ	
VS1-0876-011 000	C	1		CONNECTOR 11P	
VS1-0876-013 000	C	1		CONNECTOR 13P	
VS1-1021-008 000	C	1		CONNECTOR 8P	
VS1-1169-005 000	C	1		CONNECTOR 5P	
VS1-1169-008 000	C	1		CONNECTOR 8P	
VS1-1169-010 000	C	1		CONNECTOR 10P	
VS1-1169-015 000	C	1		CONNECTOR 15P	
VS1-1169-020 000	C	1		CONNECTOR 20P	
VS1-1169-022 000	C	1		CONNECTOR 22P	
VS1-1169-028 000	C	1		CONNECTOR 28P	
VS1-5051-008 000	C	1		CONNECTOR 8P	
VS1-5105-010 000	C	1		CONNECTOR 10P	
VS1-5106-010 000	C	2		CONNECTOR 10P	

PARTS LIST

PAGE	PART NO.	CLASS	QTY.	DESCRIPTION	REMARKS
	VS1-5106-014 000	C	2	CONNECTOR 14P	
	VS1-5106-020 000	C	2	CONNECTOR 20P	
	VS1-5108-010 000	C	1	CONNECTOR 10P	
	VS1-5108-014 000	S	2	CONNECTOR 14P	
	VS1-5149-008 000	C	2	CONNECTOR 8P	
	VS1-5184-020 000	C	2	CONNECTOR 20P	
	VS1-5256-012 000	C	4	CONNECTOR 12P	
	VS1-5256-016 000	C	4	CONNECTOR 16P	
	VS1-5256-020 000	C	2	CONNECTOR 20P	
	VS1-5256-024 000	C	4	CONNECTOR 24P	
	WA1-0617-000 000	B	1	ZENER DIODE, MA3100	
	WA1-0962-000 000	B	1	DIODE MA121	
	WA1-0963-000 000	B	2	DIODE, ZENER MA3A100	
	WA1-0989-000 000	B	1	DIODE, ZENER MA3100W	
	WA1-1084-000 000	B	19	DIODE MA110	
	WA1-1123-000 000	B	1	DIODE AG01Z	
	WA1-1146-000 000	B	1	DIODE MA707	
	WA1-1149-000 000	B	2	CHIP DIODE, LSS250	
	WA1-1164-000 000	B	2	DIODE DAN202U	
	WA1-5061-000 000	B	1	DIODE DAP202U	
	WA1-5080-000 000	B	2	DIODE EC10QS03	
	WA2-0393-000 201	B	2	TRANSISTOR 2SA1162	
	WA2-0797-000 201	B	4	TRANSISTOR 2SA1213	
	WA2-0839-000 000	B	1	TRANSISTOR 2SA1226	
	WA2-1228-000 000	B	5	TRANSISTOR IMT2	
	WA2-1232-000 000	B	5	TRANSISTOR IMZ1	
	WA2-1234-000 000	B	15	TRANSISTOR IMX2	
	WA2-1337-000 000	B	13	TRANSISTOR 2SC4081	
	WA2-1351-000 000	B	1	TRANSISTOR IMD6	
	WA2-1381-000 000	B	1	TRANSISTOR 2SC3138	
	WA2-1398-000 000	B	1	TRANSISTOR 2SA1255	
	WA2-1400-000 000	B	6	TRANSISTOR 2SA1576	
	WA2-1405-000 000	B	3	TRANSISTOR DTA124EU	
	WA2-1440-000 000	B	1	TRANSISTOR 2SA1576	
	WA2-5092-000 000	B	1	TRANSISTOR IMX5	
△	WA2-5122-000 000	B	1	TRANSISTOR FC101	
	WA2-5141-000 000	B	8	TRANSISTOR 2SA1774	
	WA2-5142-000 000	B	16	TRANSISTOR 2SC4617	
	WA2-5149-000 000	B	2	TRANSISTOR 2SB1412F5	
	WA2-5151-000 000	B	1	TRANSISTOR 2SD968A-S	
	WA2-5152-000 000	B	2	TRANSISTOR 2SB1424	
	WA2-5168-000 000	B	1	FET 2SK879	
	WA2-5347-000 000	B	1	TRANSISTOR RN2427	
	WA2-5587-000 000	B	6	TRANSISTOR XDIMD2	
	WA2-5588-000 000	B	1	TRANSISTOR XDIMB6	
	WA2-5589-000 000	B	6	TRANSISTOR XDIMH6	
	WA2-5590-000 000	B	6	TRANSISTOR XDIMH8	
	WA2-5591-000 000	B	1	TRANSISTOR XDA124EE	
	WA2-5594-000 000	B	1	TRANSISTOR XDC124EU	
	WA2-5595-000 000	B	4	TRANSISTOR XDC144EE	
	WA2-5600-000 000	B	1	TRANSISTOR XDC114EE	
	WA2-5608-000 000	B	2	TRANSISTOR XDIMH5	
	WA2-5612-000 000	B	2	TRANSISTOR XDA144EU	
	WA2-5614-000 000	B	1	TRANSISTOR XDC143EU	
	WA2-5615-000 000	B	13	TRANSISTOR XDC144EU	
	WA2-5629-000 000	B	1	TRANSISTOR XDIMB5	
	WA2-5669-000 000	B	2	TRANSISTOR XDC114TE	
	WA3-3965-000 000	B	1	IC SN74HC05NS	
	WA3-4264-000 000	B	5	IC SC14S66F	
	WA3-5156-000 000	B	1	IC TC74HC32AF	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	WA3-5173-000 000	B	3	IC SC7S00F	
	WA3-5201-000 000	B	1	IC MN3106S	
	WA3-5323-000 000	B	1	IC MB625184UPF	
	WA3-5455-000 000	B	2	IC SC7SU04F	
	WA3-5548-000 000	B	1	IC TMS4C1050-40DJ	
	WA3-5678-000 000	B	2	IC MC74HC164FL2	
	WA3-6393-000 000	B	1	IC CXD2120Q	
	WA3-6755-000 000	B	1	IC MC74HC165FL2	
	WA3-6860-000 000	B	1	IC NM93C06EM8	
	WA3-7051-000 000	B	1	IC S8420AF	
	WA4-1145-000 000	B	2	IC RH5VA45AA	
	WA4-1172-000 000	B	1	IC NJM3415M	
	WA4-1293-000 000	B	1	IC PST529CMT	
	WA4-1322-000 000	B	1	IC AN2514S	
	WA4-1332-000 000	B	1	IC NJM2406F	
	WA4-5161-000 000	B	1	IC CXA1512M	
	WA4-5164-000 000	B	1	IC uPC393G2	
	WA4-5213-000 000	B	1	IC RH5RE50AA	
	WA4-5406-000 000	B	1	IC NJM2284M	
	WA4-5422-000 000	B	1	IC S-81350HG	
	WA4-5437-000 000	B	3	IC LVC556PA2	
	WA4-5470-000 000	B	1	IC TL1596CDB	
	WA4-5476-000 000	B	2	IC NJM2508M	
	WA4-5557-000 000	B	1	IC CX20102	
	WA4-5919-000 000	B	1	IC CXA8006BM	
△	WA8-0195-000 000	C	1	THERMISTER	
	WD8-5020-000 000	D	3	LINK, IC DCT2000	
	WG1-0417-000 000	B	1	LED SLH-56VT144F	
	WK2-0254-000 000	B	1	OSCILLATOR, CRYSTAL (4.19MHz)	
	WK2-5117-000 000	C	1	OSCILLATOR, CRYSTAL (8MHz)	
	WK2-5160-000 000	C	1	OSCILLATOR, CRYSTAL (12MHz)	
6	WS6-0104-000 000	C	1	JACK, PIN (WHITE)	
6	WS6-0105-000 000	C	1	JACK, PIN (RED)	
6	XAL-7200-307 000	F	13	SCREW, CROSS-RECESS, PH	
2	XAL-7200-409 000	F	2	SCREW, CROSS-RECESS, PH	
2	XAL-7200-509 000	F	1	SCREW, CROSS-RECESS, PH	
4	XA4-6200-359 000	F	1	SCREW, CROSS-RECESS, FCH	
4	XA4-6200-707 000	F	6	SCREW, CROSS-RECESS, FCH	
4	XA4-6201-209 000	F	3	SCREW, CROSS-RECESS, FCH	
2	XA4-8200-609 000	F	4	SCREW, CROSS-RECESS, FCH	
4	XA4-9170-409 000	F	2	SCREW, CROSS-RECESS, PH	
2	XA4-9200-409 000	F	1	SCREW, CROSS-RECESS, PH	
2,4	XA4-9200-509 000	F	43	SCREW, CROSS-RECESS, PH	
4	XA4-9200-609 000	F	8	SCREW, CROSS-RECESS, PH	
2	XA4-9200-709 000	F	6	SCREW, CROSS-RECESS, PH	
6	XA9-0484-000 000	F	5	SCREW, CROSS-RECESS, FCH	
6	XA9-0682-000 000	F	1	SCREW, CROSS-RECESS, PH	
6	XB4-6201-609 000	F	2	SCREW, CROSS-RECESS	
2	X99-0619-000 000	F	1	SCREW, CROSS-RECESS	
10	Y22-8012-000 000	B	1	LED GL452S	
6	Y22-8120-000 000	B	1	SENSOR, DEW	
10	Y22-8121-000 000	B	2	PHOTO IC SPI-315-25-CD	
10	Y22-8123-000 000	B	2	PHOTO TRANSISTOR EE-TP109	

CHAPTER V. DIAGRAMS

1.	Interconnection Diagram	V - 1
2.	Block Diagrams	
2-1	CAMERA SECTION (AUTO FOCUS P.C.B.)	V - 2
2-2	CAMERA SECTION (PROCESS 1•2 P.C.B.)	V - 3
2-3	SYS CON-SERVO SECTION	V - 4
2-4	DIGITAL-SIGNAL-PROCESS SECTION	V - 5
2-5	AUDIO-VIDEO SECTION	V - 6
3.	Circuit Board/Schematic Diagrams	
3-1	AUTO FOCUS P.C.B.	V - 7, 8,
3-2	PROCESS 1•2 P.C.B.	V - 9, 10,
3-3	VIDEO P.C.B.	V - 11, 12,
3-4	RECORDER-KEY (1), EVF P.C.B.	V - 13, 14,
3-5	SYS CON-SERVO P.C.B.	V - 15, 16, 17, 18, 19, 20

<Indications in circuit diagrams>

- Resistance is represented in ohms (Ω).
- Capacitance is represented in farads (F).
- Wattage of resistor is 1/16 W unless otherwise specified.
- Withstand voltage of capacitor is 25 V unless otherwise specified.
- Waveform photographs are taken by using a 10:1 probe.
- IC Nos. in P.C.B.s are listed on the bottom of diagrams.
- Voltage values are waveform photographs in circuit diagram are based on the following condition.

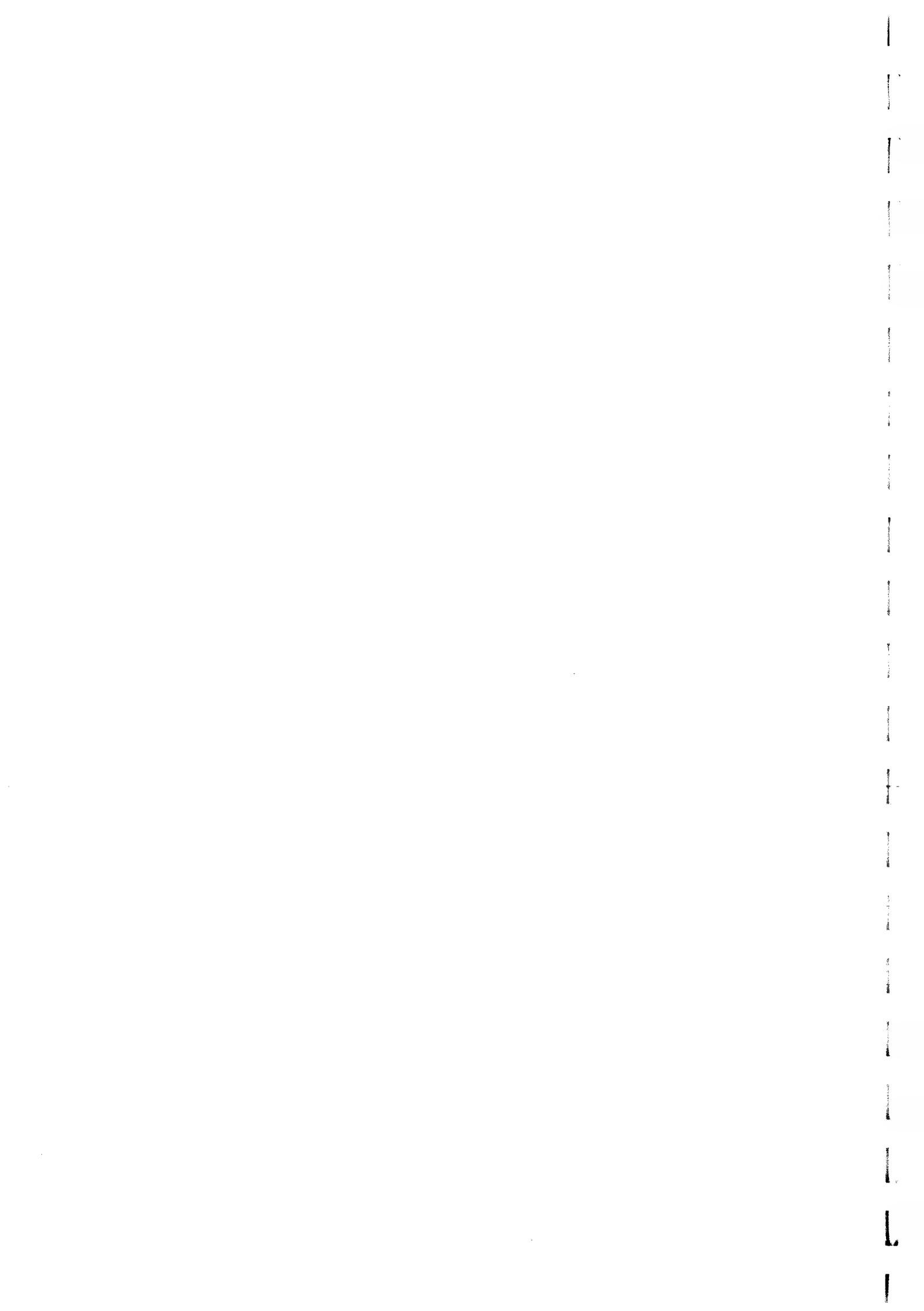
Camera section conditions

Color bar, standard angle of view

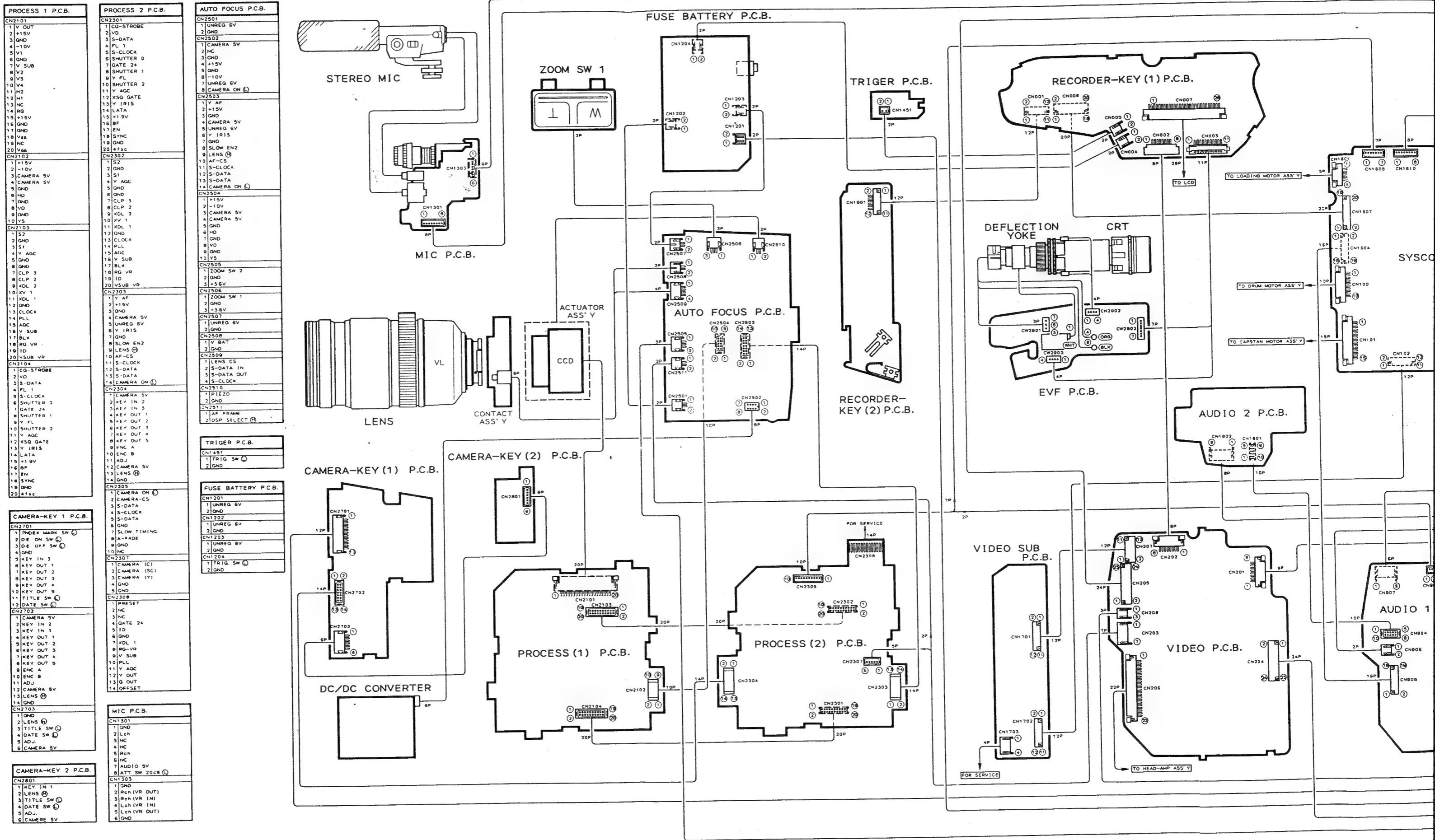
Recorder section conditions

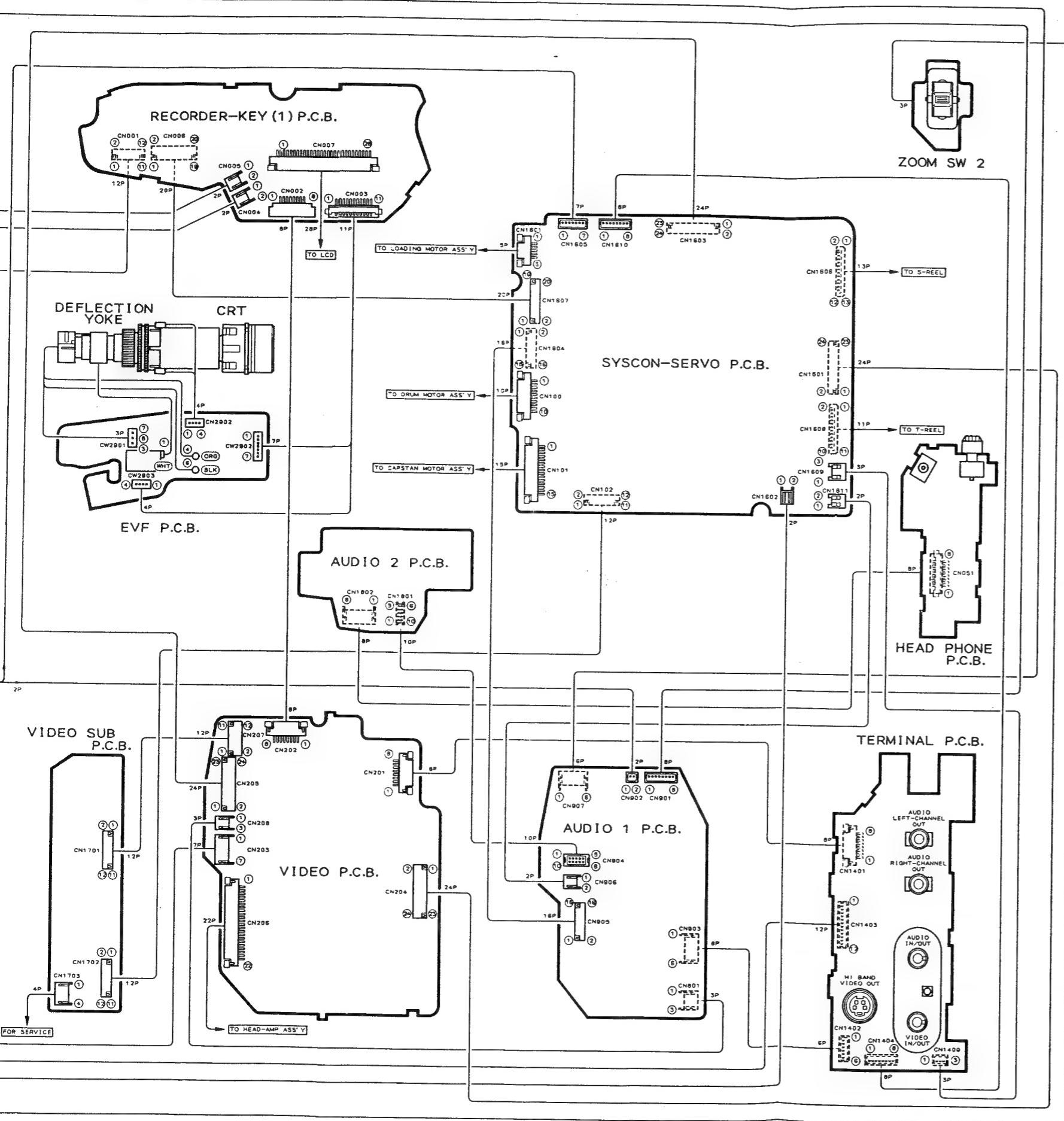
Recording : Color bar (pattern generator)

Playback : Self-recording playback (color bar)



INTERCONNECTION DIAGRAM





RECORDED-KEY 1 P.C.B.	
1 NC	
2 NC	
3 NC	
4 LINE IN/OUT SW	①
5 SP/LP SW	②
6 COUNTER/TC SW	③
7 SW	④
8 SW	⑤
9 SHIFT SW	⑥
10 TITLE/DATE SW	⑦
11 LITHIUM 3V	⑧
12 GND	⑨

SYSCON-SERVO P.C.B.	
1 GND	①
2 NC	②
3 PG-COM	③
4 D-PG	④
5 FG-COM	⑤
6 GND	⑥
7 COM	⑦
8 W	⑧
9 V	⑨
10 MODE 1	⑩
11 MODE 2	⑪
12 MODE 3	⑫
13 S-REEL FG	⑬
14 SS 5V	⑭
15 EOT SENS. ⑮	
16 CASSETTE DOWN ⑯	
17 QND	
18 MODE 1	
19 MODE 2	
20 MODE 3	
21 S-REEL FG	
22 SS 5V	
23 EOT LED (-)	

SYSCON-SERVO P.C.B.	
1 NC	①
2 NC	②
3 PG-COM	③
4 D-PG	④
5 FG-COM	⑤
6 GND	⑥
7 COM	⑦
8 W	⑧
9 V	⑨
10 MODE 1	⑩
11 MODE 2	⑪
12 MODE 3	⑫
13 S-REEL FG	⑬
14 SS 5V	⑭
15 EOT SENS. ⑮	
16 CASSETTE DOWN ⑯	
17 QND	
18 MODE 1	
19 MODE 2	
20 MODE 3	
21 S-REEL FG	
22 SS 5V	
23 EOT LED (-)	

VIDEO P.C.B.	
1 S CONNECTED ①	
2 EDIT SW ②	
3 VIDEO 5V	③
4 VIDEO I/O	④
5 GND	⑤
6 C 1/O	⑥
7 QND	⑦
8 Y 1/O	⑧

AUDIO 1 P.C.B.	
1 GND	①
2 Lch	②
3 L-BIAS	③
4 R-BIAS	④
5 Rec	⑤
6 GND	⑥
7 AUDIO 5V	⑦
8 ATT SW 20dB ⑧	

SYS CON-SERVO P.C.B.	
1 NC	①
2 NC	②
3 PG-COM	③
4 D-PG	④
5 FG-COM	⑤
6 GND	⑥
7 COM	⑦
8 W	⑧
9 V	⑨
10 MODE 1	⑩
11 MODE 2	⑪
12 MODE 3	⑫
13 S-REEL FG	⑬
14 SS 5V	⑭
15 EOT SENS. ⑮	
16 CASSETTE DOWN ⑯	
17 QND	
18 MODE 1	
19 MODE 2	
20 MODE 3	
21 S-REEL FG	
22 SS 5V	
23 EOT LED (-)	

SYS CON-SERVO P.C.B.	
1 NC	①
2 NC	②
3 PG-COM	③
4 D-PG	④
5 FG-COM	⑤
6 GND	⑥
7 COM	⑦
8 W	⑧
9 V	⑨
10 MODE 1	⑩
11 MODE 2	⑪
12 MODE 3	⑫
13 S-REEL FG	⑬
14 SS 5V	⑭
15 EOT SENS. ⑮	
16 CASSETTE DOWN ⑯	
17 QND	
18 MODE 1	
19 MODE 2	
20 MODE 3	
21 S-REEL FG	
22 SS 5V	
23 EOT LED (-)	

VIDEO P.C.B.	
1 S CONNECTED ①	
2 EDIT SW ②	
3 VIDEO 5V	③
4 VIDEO I/O	④
5 GND	⑤
6 C 1/O	⑥
7 QND	⑦
8 Y 1/O	⑧

AUDIO 1 P.C.B.	
1 GND	①
2 Lch	②
3 L-BIAS	③
4 R-BIAS	④
5 Rec	⑤
6 GND	⑥
7 AUDIO 5V	⑦
8 ATT SW 20dB ⑧	

AUDIO 1 P.C.B.	
1 GND	①
2 Lch	②
3 L-BIAS	③
4 R-BIAS	④
5 Rec	⑤
6 GND	⑥
7 AUDIO 5V	⑦
8 ATT SW 20dB ⑧	

CN901	
1 GND	①
2 Lch	②
3 L-BIAS	③
4 R-BIAS	④
5 Rec	⑤
6 GND	⑥
7 AUDIO 5V	⑦
8 ATT SW 20dB ⑧	

CN902	
1 A-FADE	①
2 GND	②
3 Lch	③
4 GND	④
5 Rec	⑤
6 GND	⑥

CN903	
1 MONO 1/O	①
2 GND	②
3 Lch	③
4 GND	④
5 Rec	⑤
6 GND	⑥

CN904	
1 GND	①
2 TRIG SW	②
3 GND	③
4 TRIG SW	④
5 GND	⑤
6 HEAD SW PULSE	⑥
7 H-ADJ. ADJ.	⑦
8 TS B	⑧
9 GND	⑨
10 REC	⑩
11 TS B	⑪
12 ATF ERROR	⑫
13 ATF LOCK	⑬
14 ATF SW	⑭
15 SEL2	⑮
16 SEL1	⑯

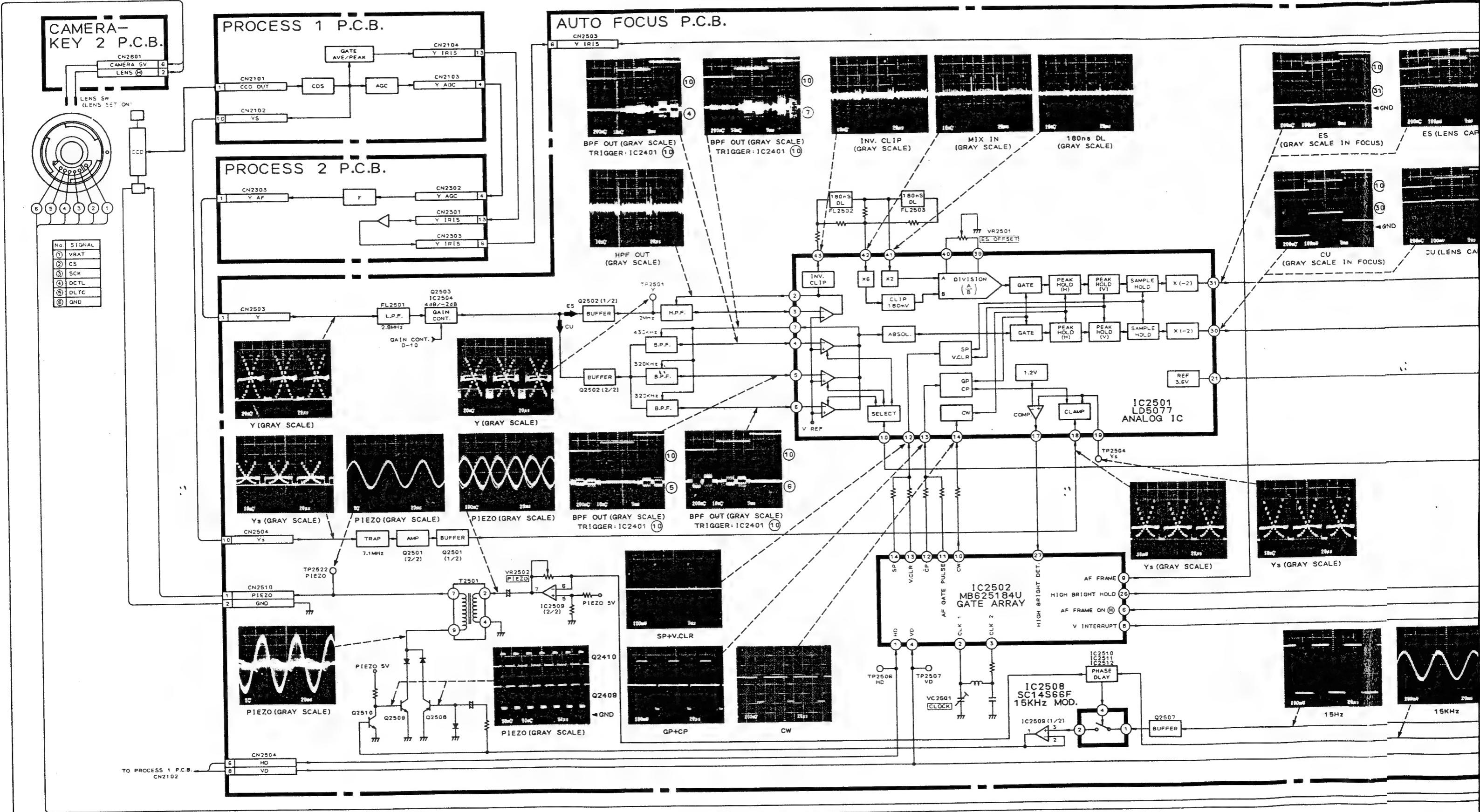
CN905	
1 HEAD SW PULSE (V. A)	①
2 A-MUTE ②	
3 PB ③ /EE ④	

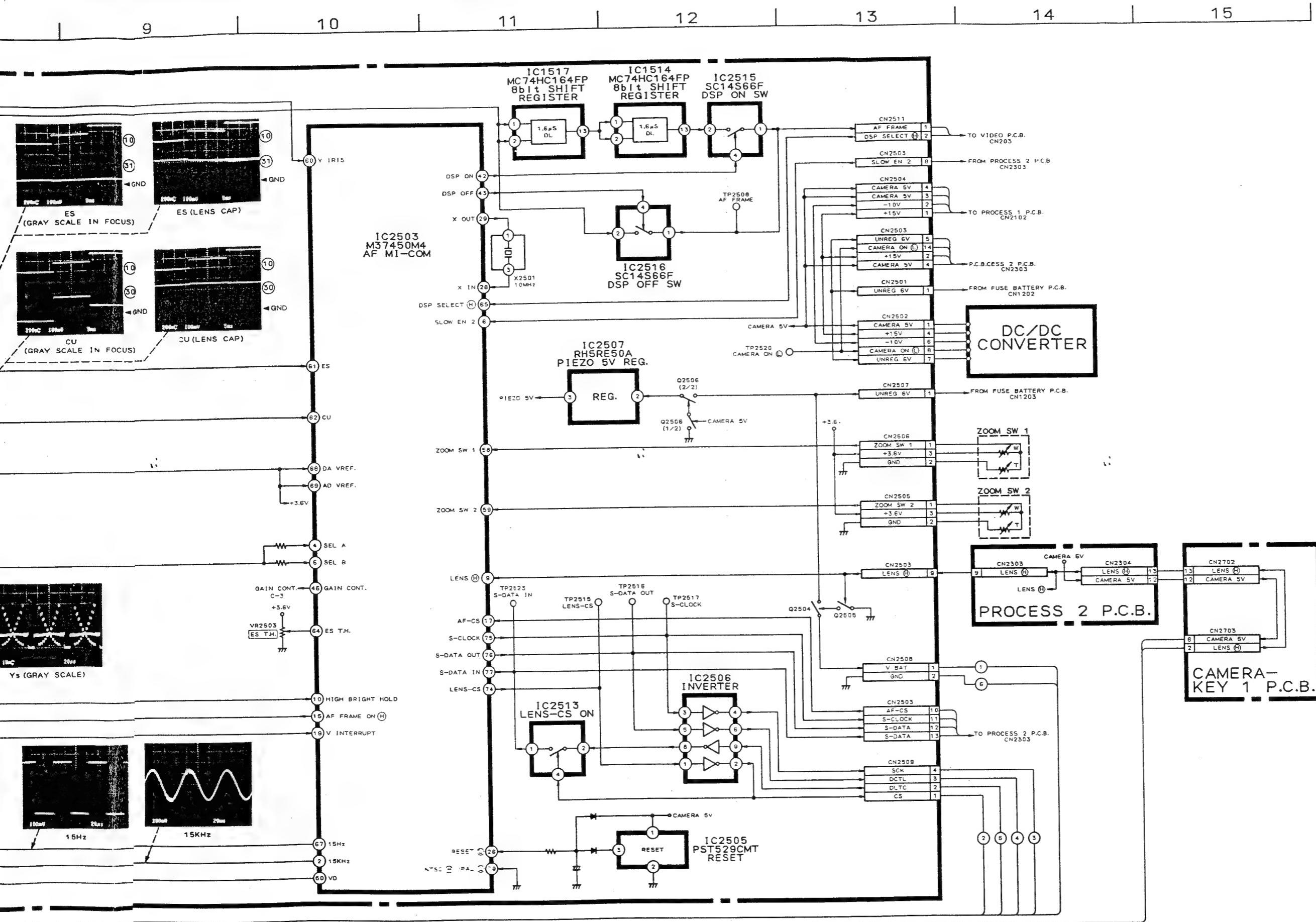
CAMERA SECTION (AUTO FOCUS P.C.B.)

1 2 3 4 5 6 7 8 9

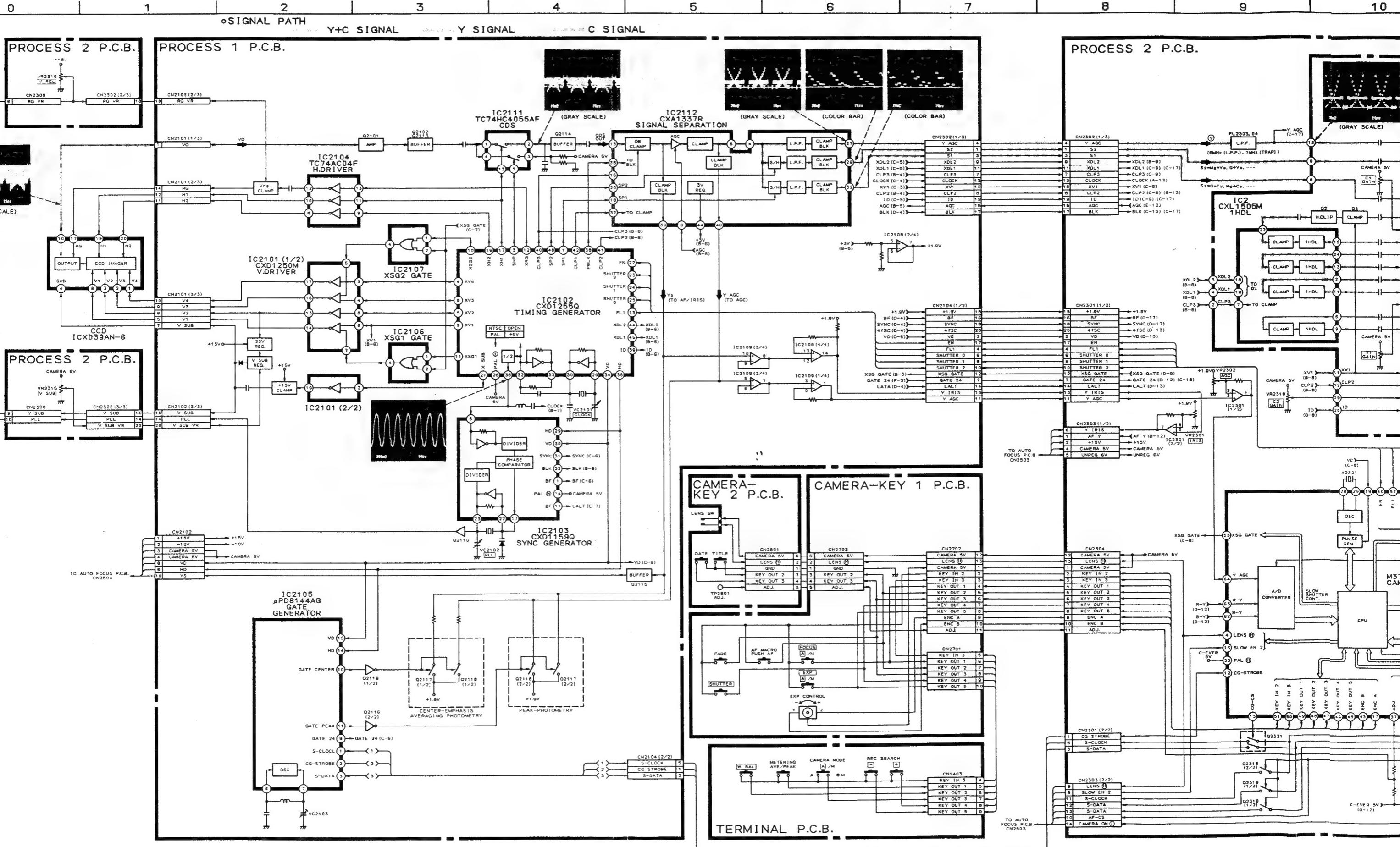
• SIGNAL PATH

ES/CU SIGNAL



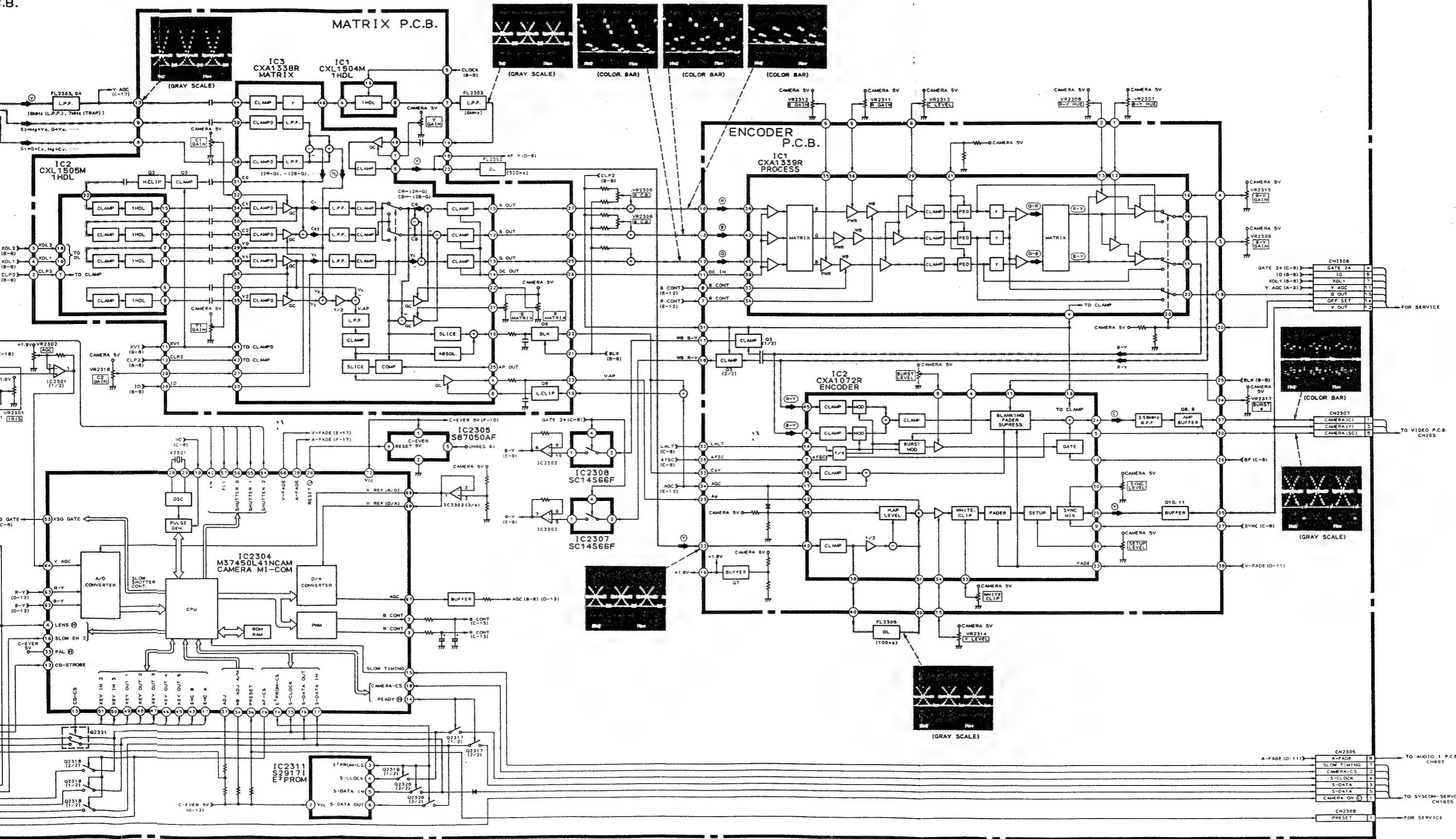


CAMERA SECTION (PROCESS 1, 2 P.C.B.)



9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18

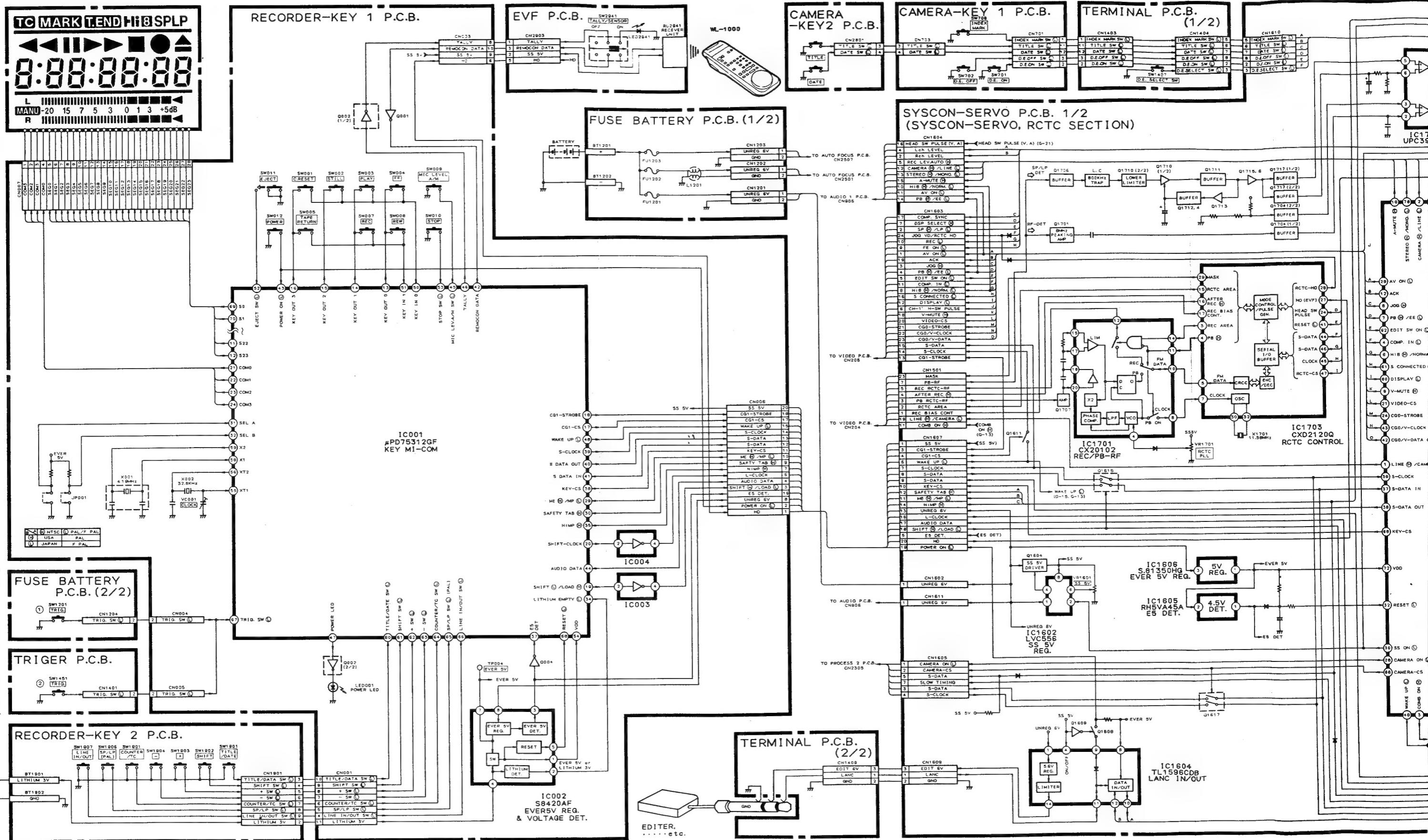
.B.



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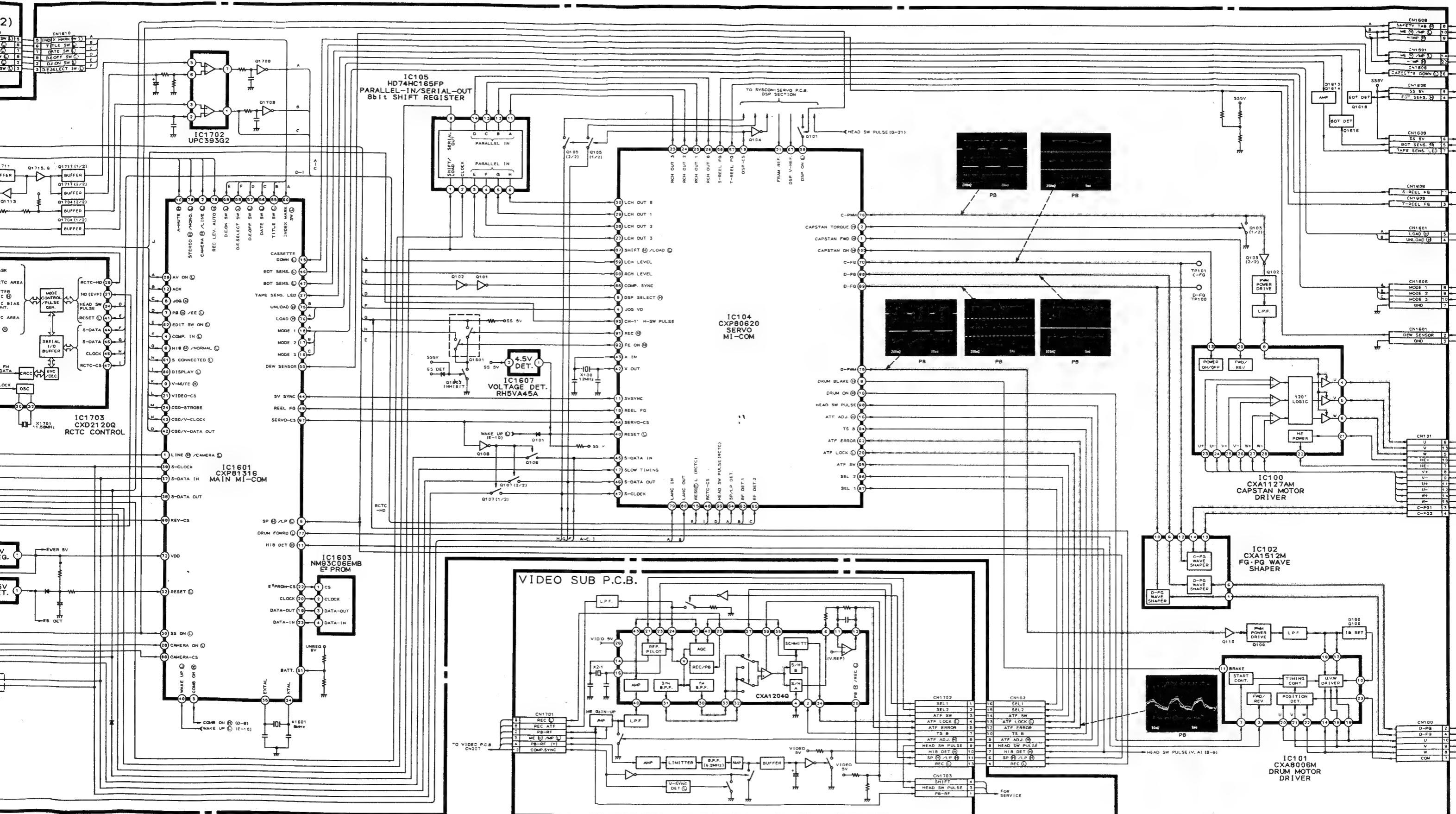
SCON-SERVO SECTION

1 2 3 4 5 6 7 8 9 10 11 12



12 13 14 15 16 17 18 19 20 21 22 23

CAPSTAN SERVO



15

16

17

18

19

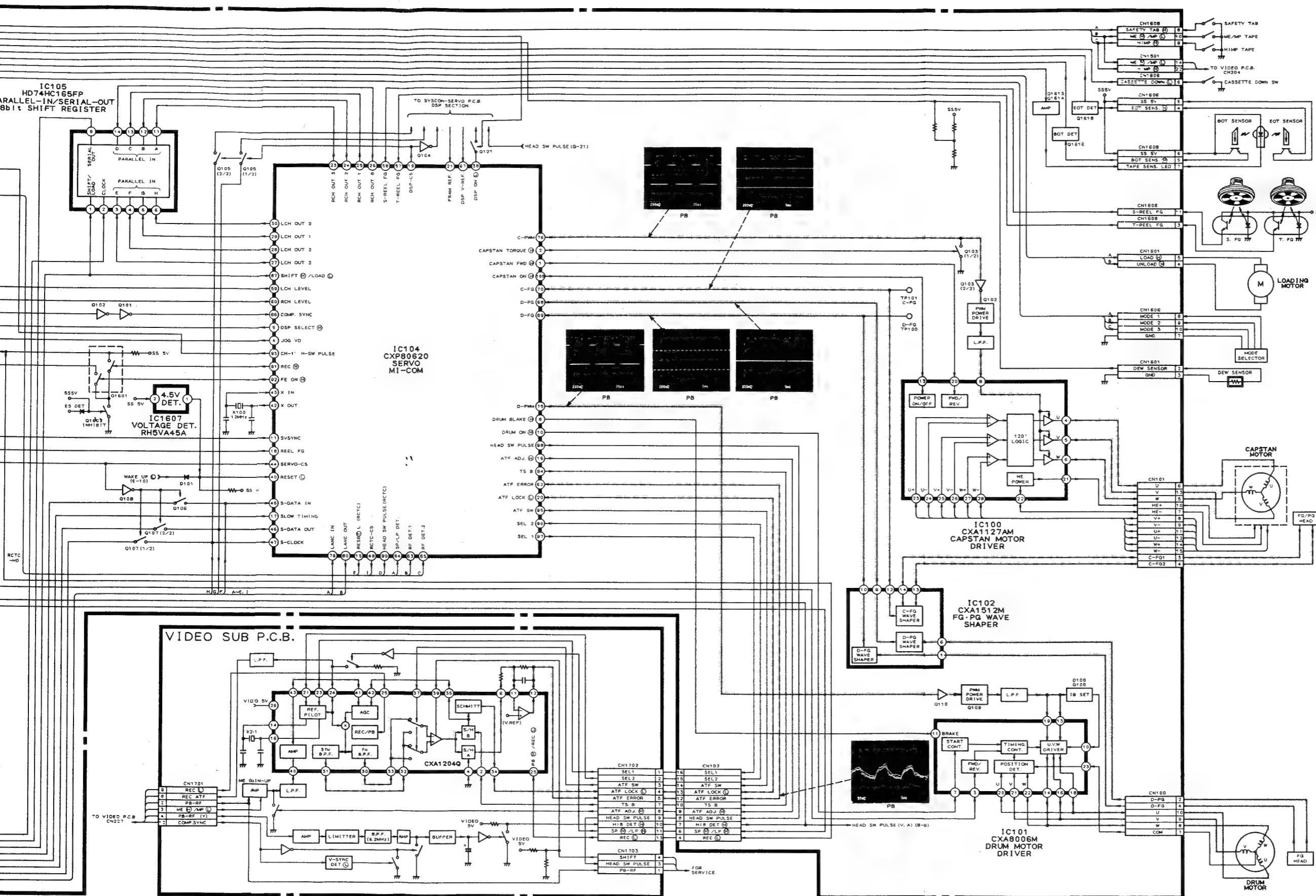
20

21

22

23

24

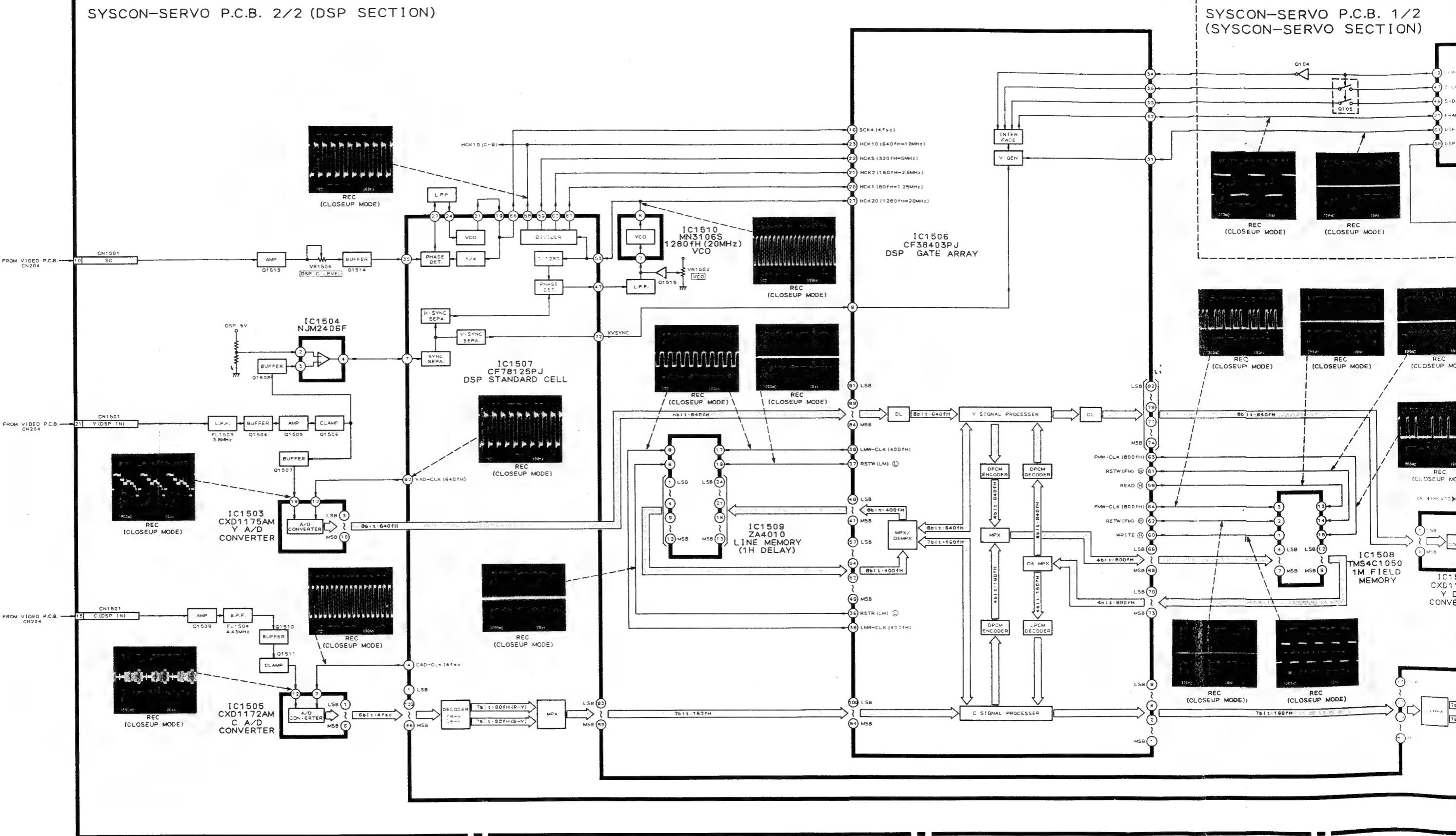


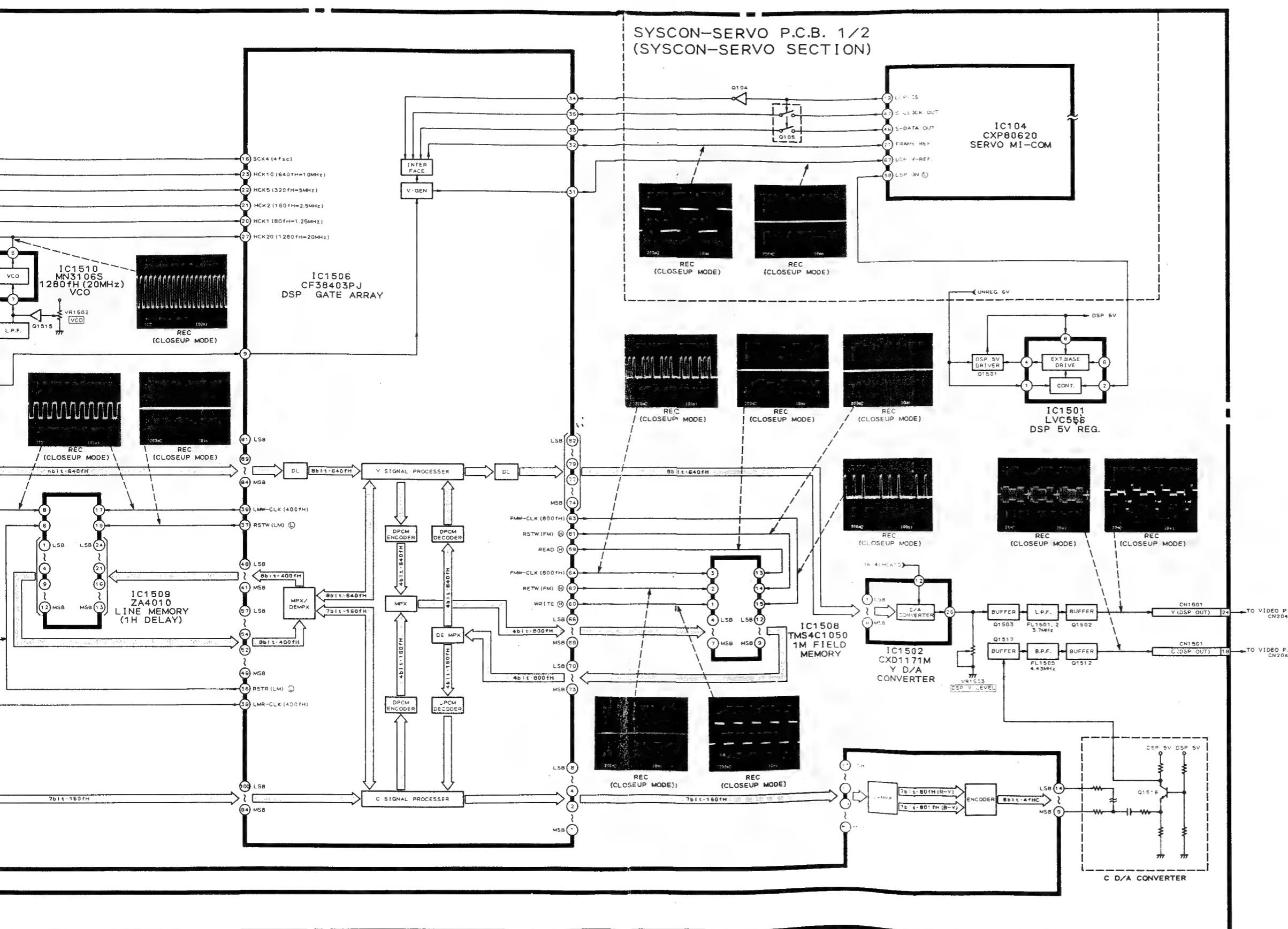
DIGITAL-SIGNAL-PROCESS SECTION

1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10

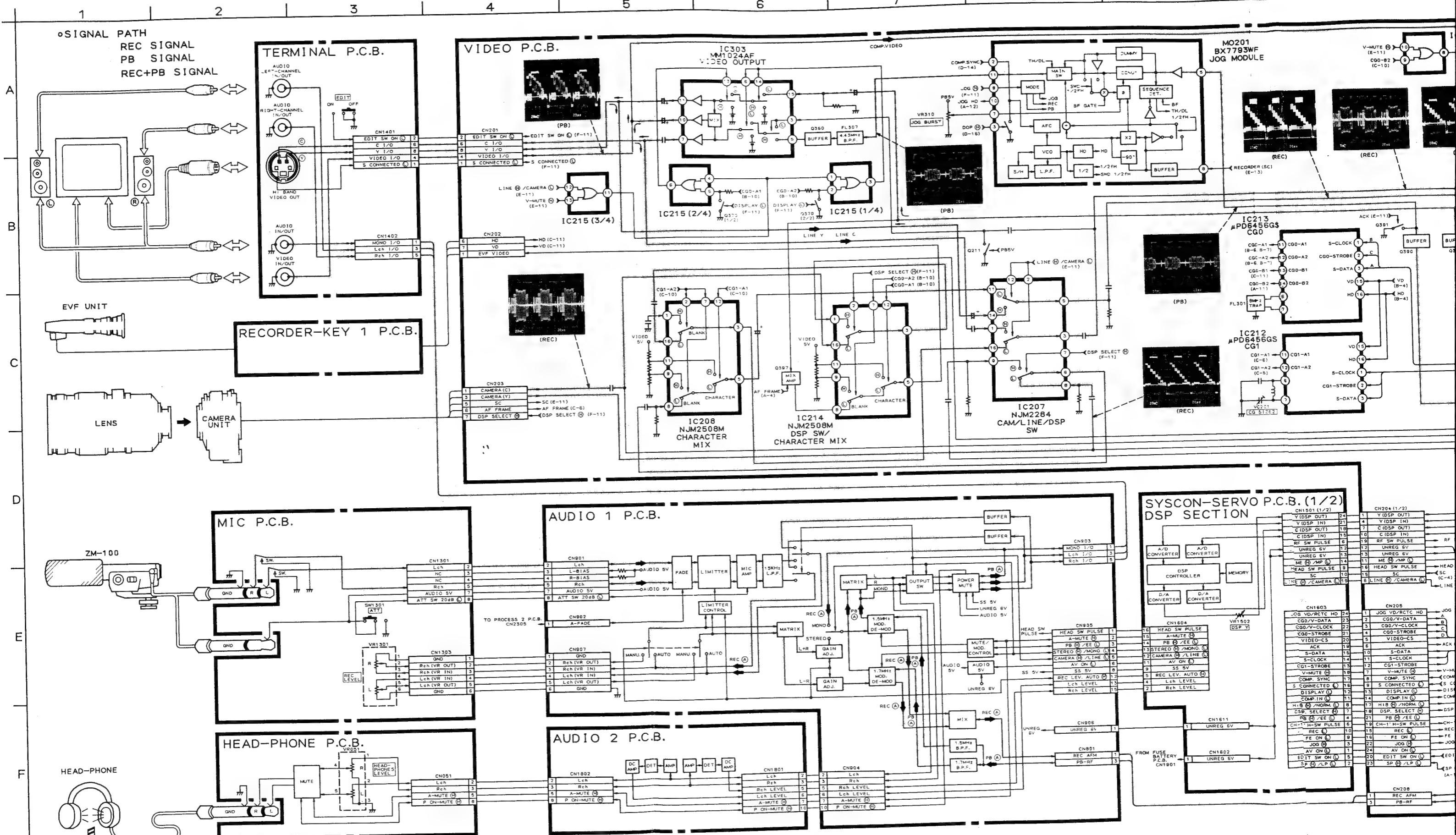
• SIGNAL PATH Y+C SIGNAL Y SIGNAL C SIGNAL

SYSCON-SERVO P.C.B. 2/2 (DSP SECTION)

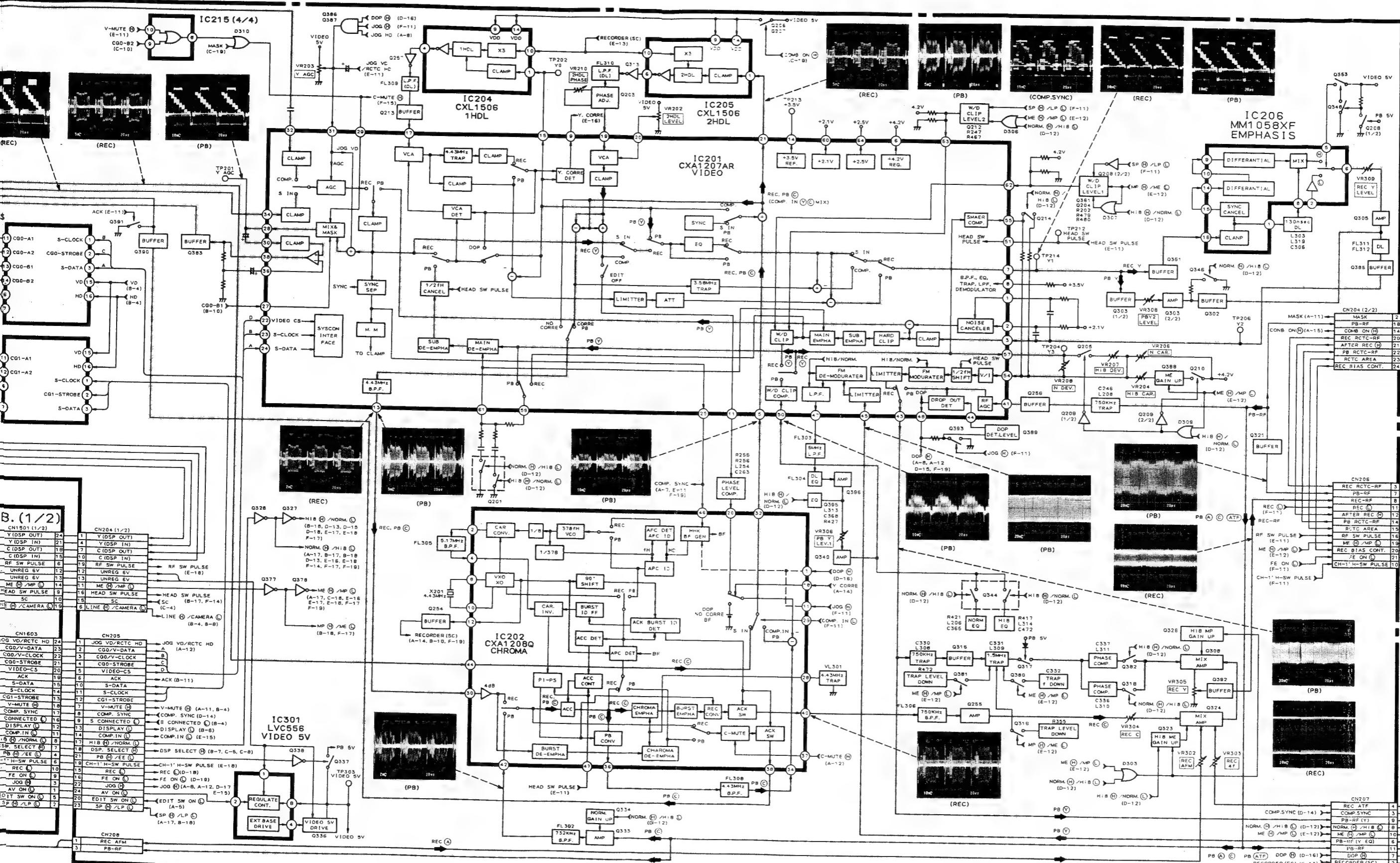




AUDIO-VIDEO SECTION



10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20



SYSCON-SERVO P.C.
RRTC SECTION

HEAD AMP P.C.B.

VIDEO SUB P.C.B.

CN1501 (2/2)	REC RRTC-RF
7	PB-RF
1	REC
14	AFTER REC
20	PB RRTC-RF
21	AFTER REC
22	PB RRTC-RF
23	RTC AREA
24	REC BIAS CONT.

CN206	REC RRTC-RF
3	PB-RF
8	REC
12	AFTER REC
14	PB RRTC-RF
15	RTC AREA
16	RF SW PULSE
19	ME H/MP
20	REC BIAS CONT.
21	FE ON
10	CH-1 H-SW PULSE

CN207	REC ATF
4	COMP SYNC
3	PB-RF (Y)
9	NORM H/HB
8	ME H/MP
10	PB-RF (Y EQ)
6	DOP (H)
7	DOP (S)
2	REC
11	PB-RF
12	DOP (H)
13	REC RRTC (SC)

13

14

15

16

17

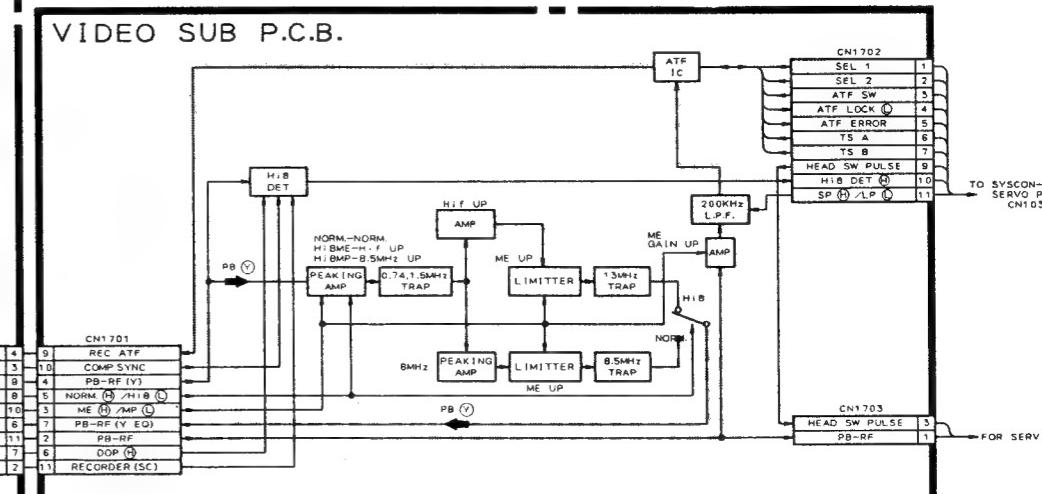
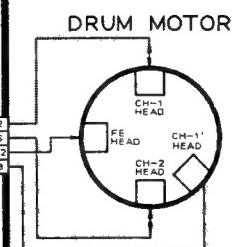
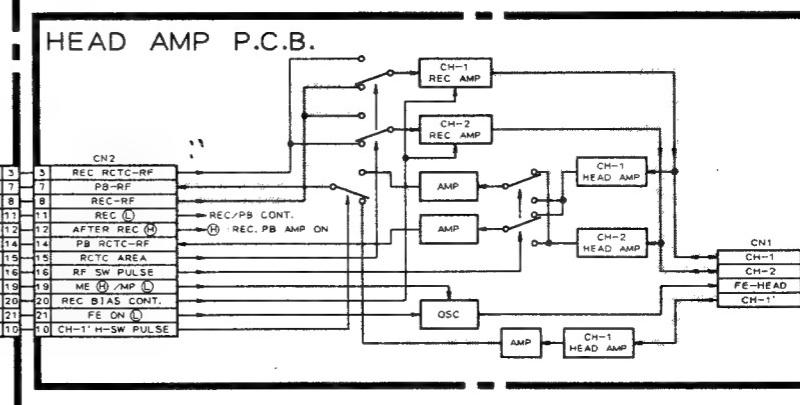
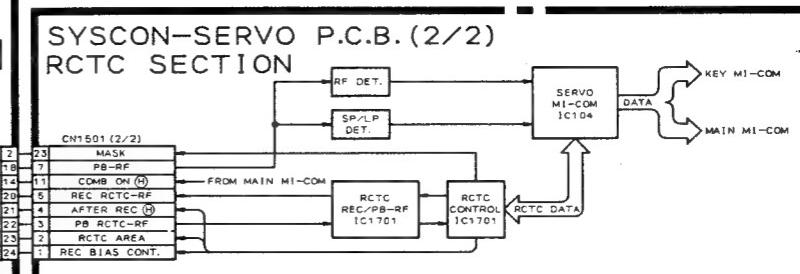
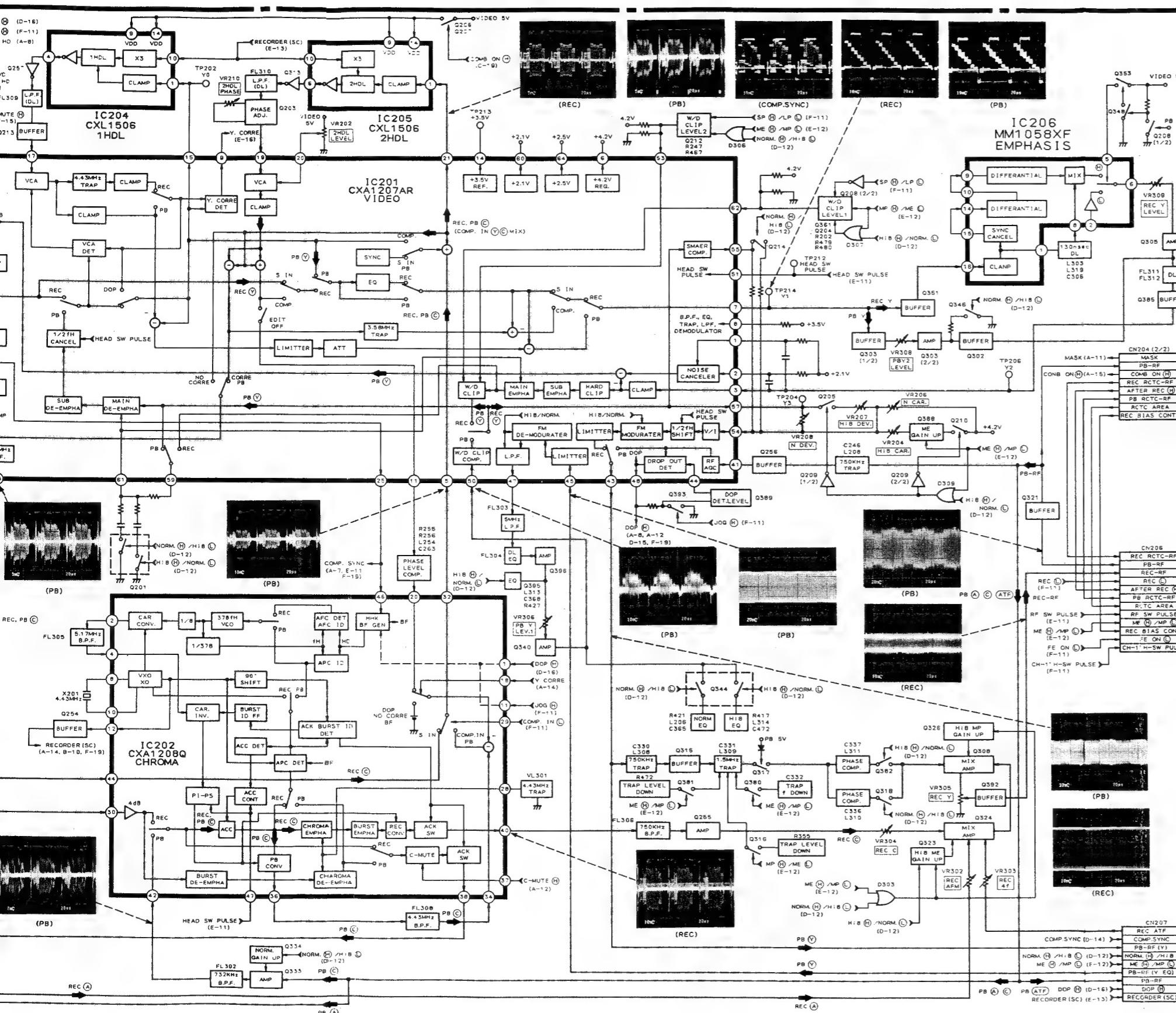
18

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22



AUTO FOCUS P.C.B. (COMPONENT SIDE)

< NOTICE >

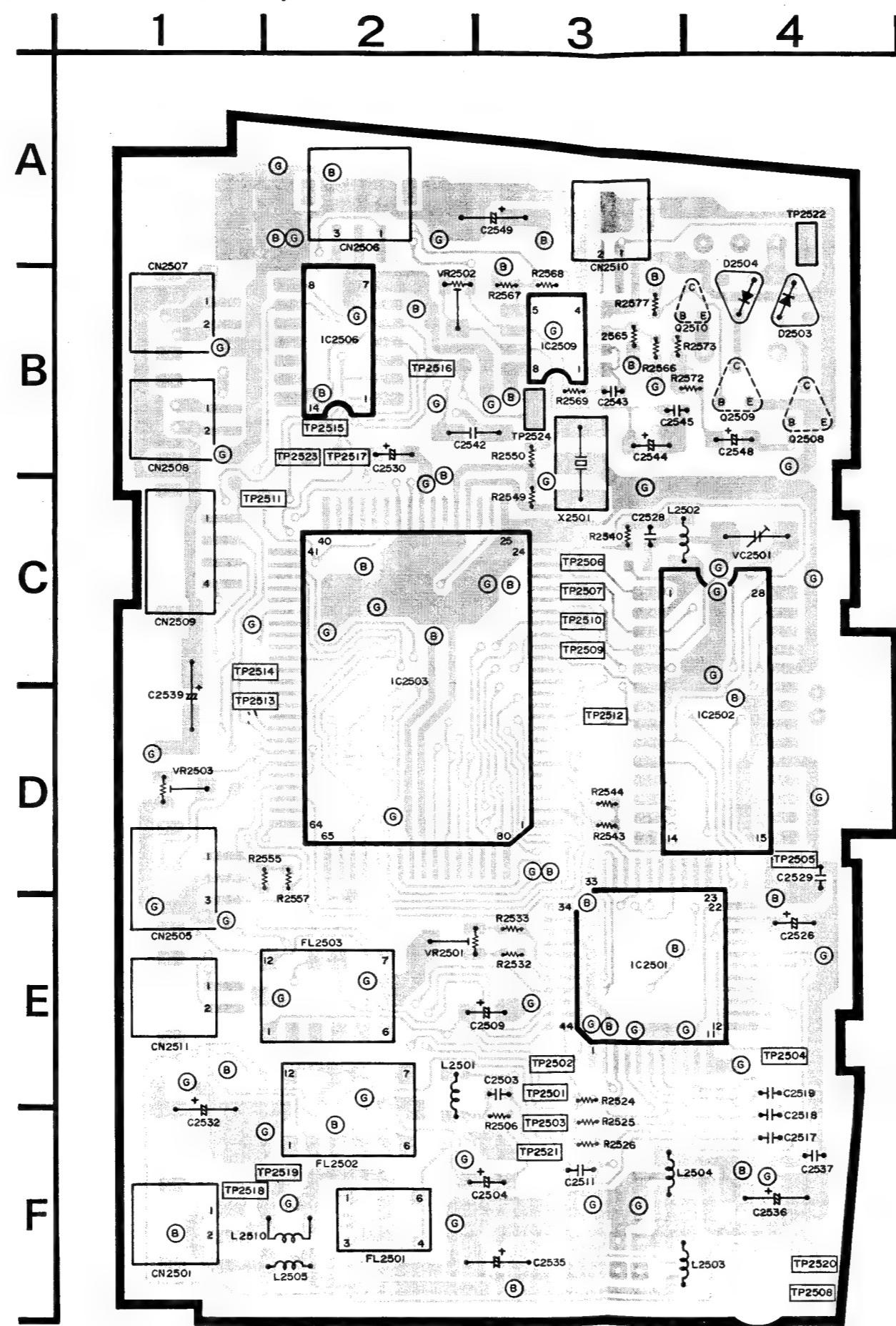
< NOTICE >
The AUTO FOCUS P.C.B. consists of four layers.
(Soldering, Ground, Power Supply and Component.)
As the Signal Pattern which connected in the layers
of Ground and Power Supply are omitted here, please
refer to the Circuit Diagram.

* Through-hole marks on each P.C.B. denote:

- ※ Through-hole marks on each P.C.B. denote :

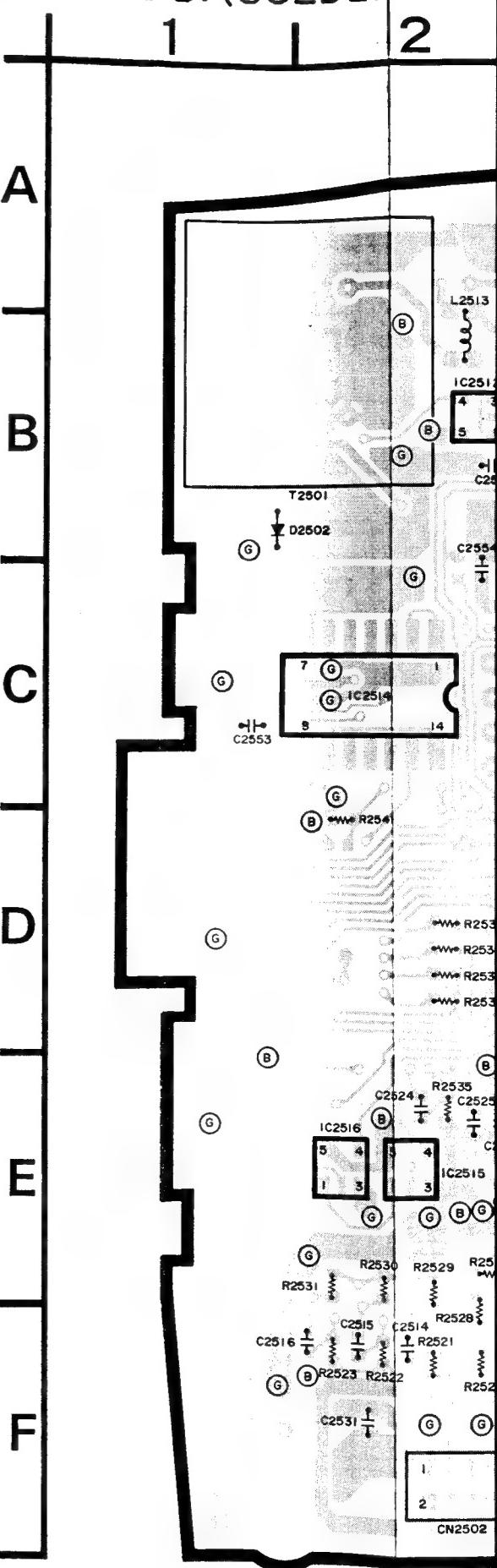
 - : Soldering side ← Component side
 - (G) : Soldering side (Component side) ← Ground
 - (B) : Soldering side (Component side) ← Power Supply

D 2 5 0 3	B - 4
D 2 5 0 4	B - 4
I C 2 5 0 1	E - 3
I C 2 5 0 2	D - 4
I C 2 5 0 3	D - 2
I C 2 5 0 6	B - 2
I C 2 5 0 9	B - 3
Q 2 5 0 8	B - 4
Q 2 5 0 9	B - 4
Q 2 5 1 0	B - 4
V C 2 5 0 1	C - 4
V R 2 5 0 1	E - 2
V R 2 5 0 2	B - 2
V R 2 5 0 3	D - 1



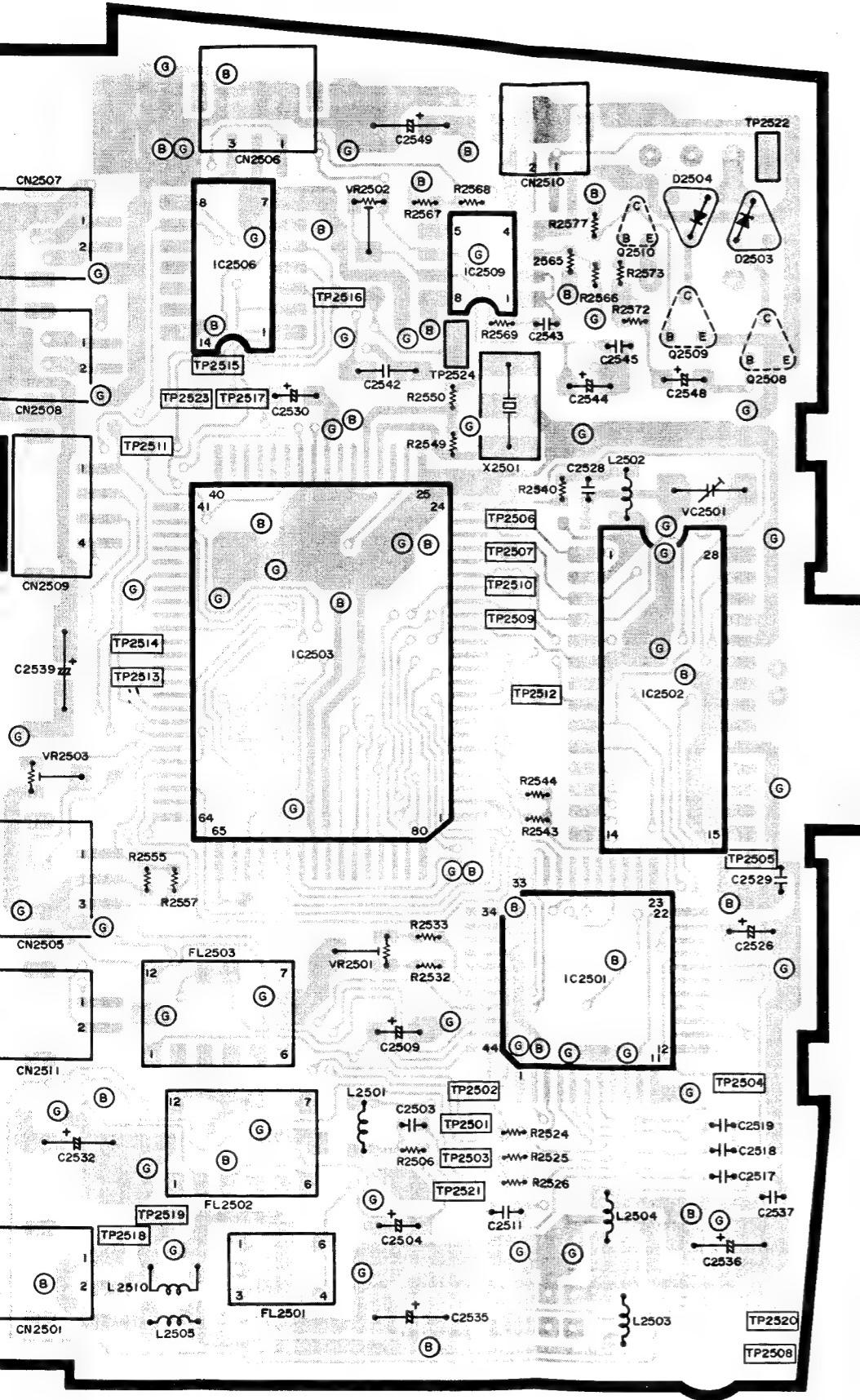
AUTO FOCUS P.C.B. (SOLDERING)

D	2	5	0	1	C - 3
D	2	5	0	2	B - 1
D	2	5	0	5	C - 4
D	2	5	0	6	C - 4
I	C	2	5	0	F - 4
I	C	2	5	0	C - 3
I	C	2	5	0	A - 3
I	C	2	5	0	B - 3
I	C	2	5	1	B - 3
I	C	2	5	1	B - 3
I	C	2	5	1	B - 2
I	C	2	5	1	B - 3
I	C	2	5	1	C - 2
I	C	2	5	1	E - 2
I	C	2	5	1	E - 2
I	C	2	5	1	C - 3
Q	2	5	0	1	F - 3
Q	2	5	0	2	E - 4
Q	2	5	0	3	F - 4
Q	2	5	0	4	B - 4
Q	2	5	0	5	B - 4
Q	2	5	0	6	A - 4
Q	2	5	0	7	B - 3



IT SIDE)

1 2 3 4



AUTO FOCUS P.C.B. (SOLDERING SIDE)

1 2 3 4

A

B

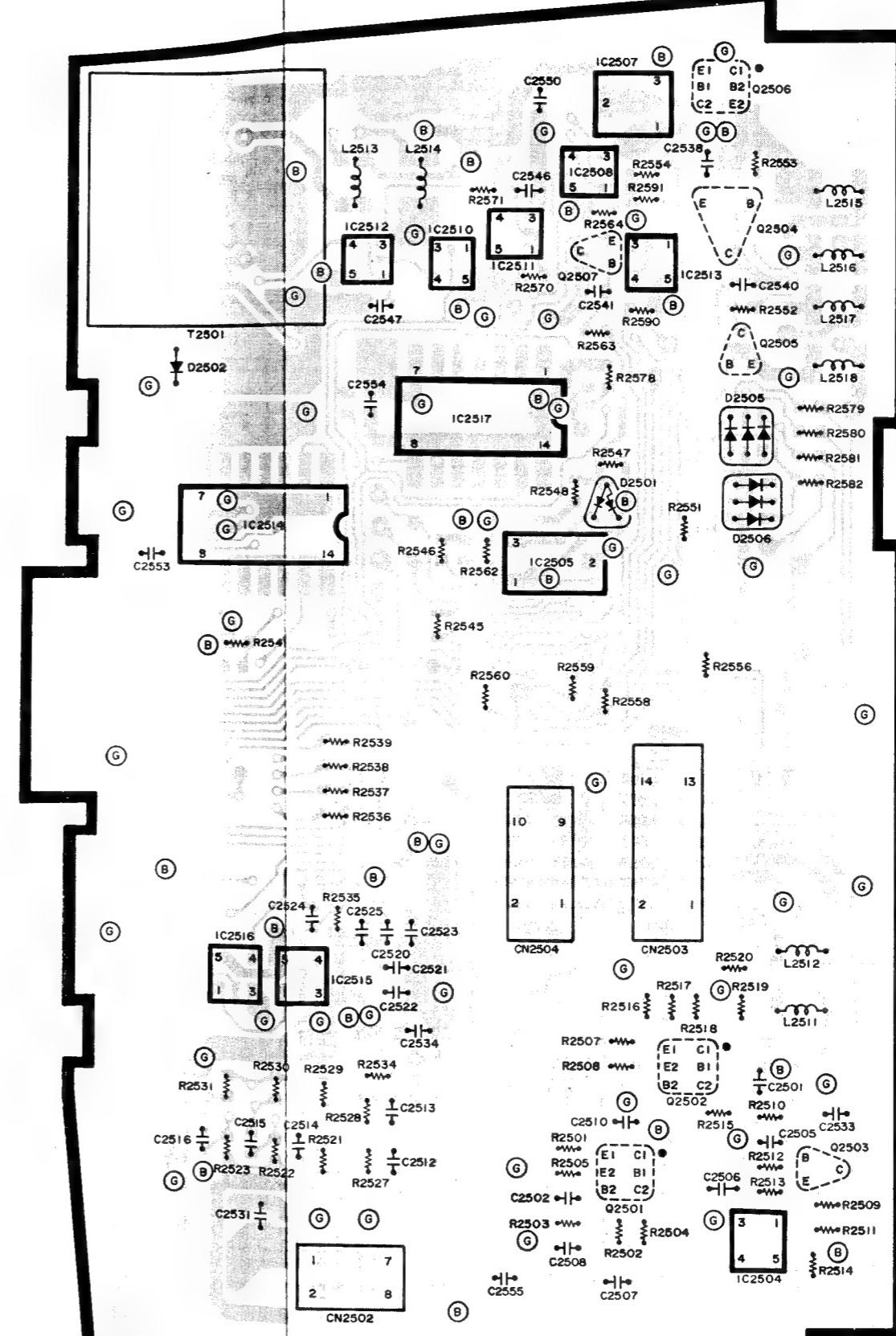
C

D

E

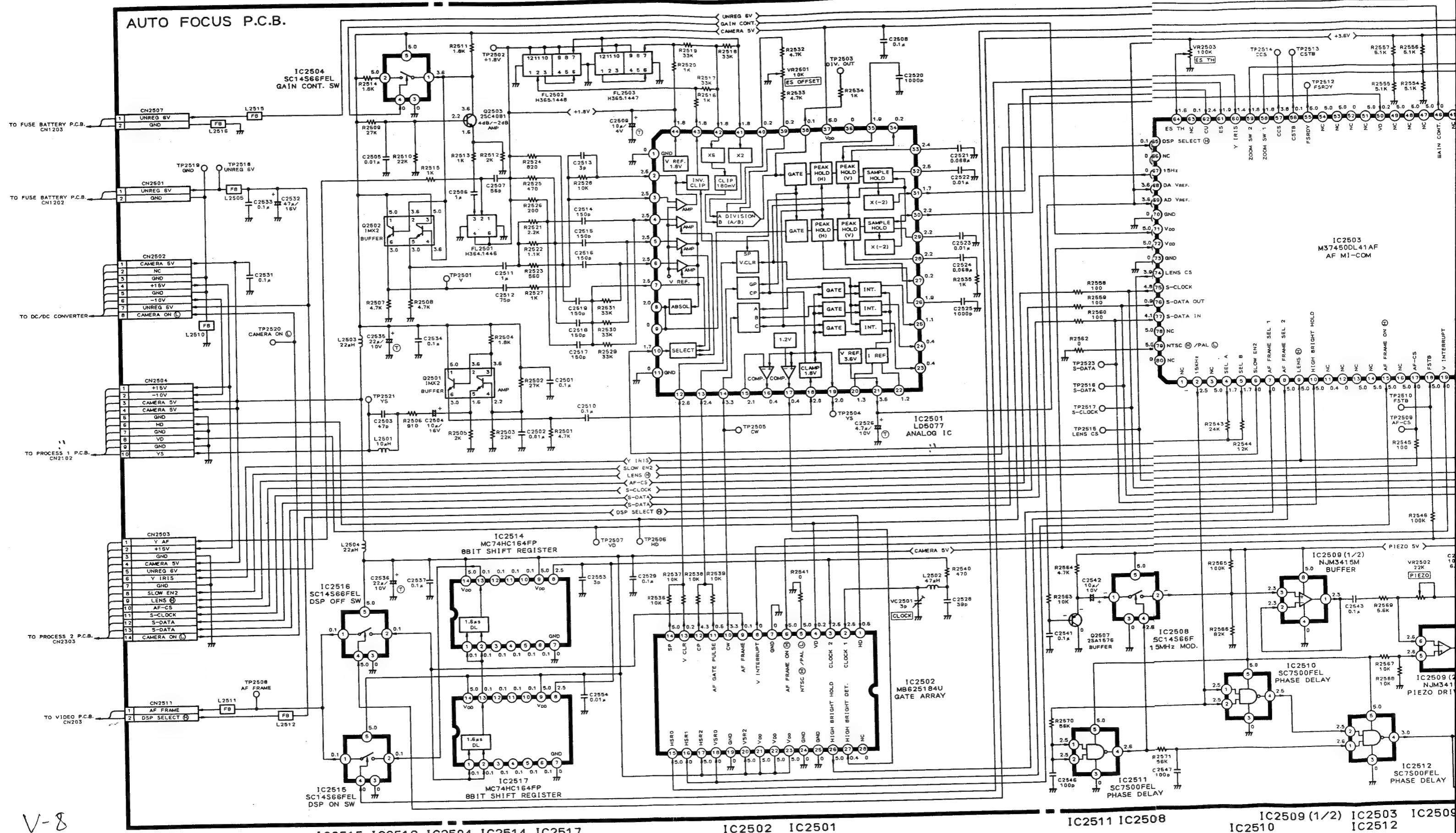
F

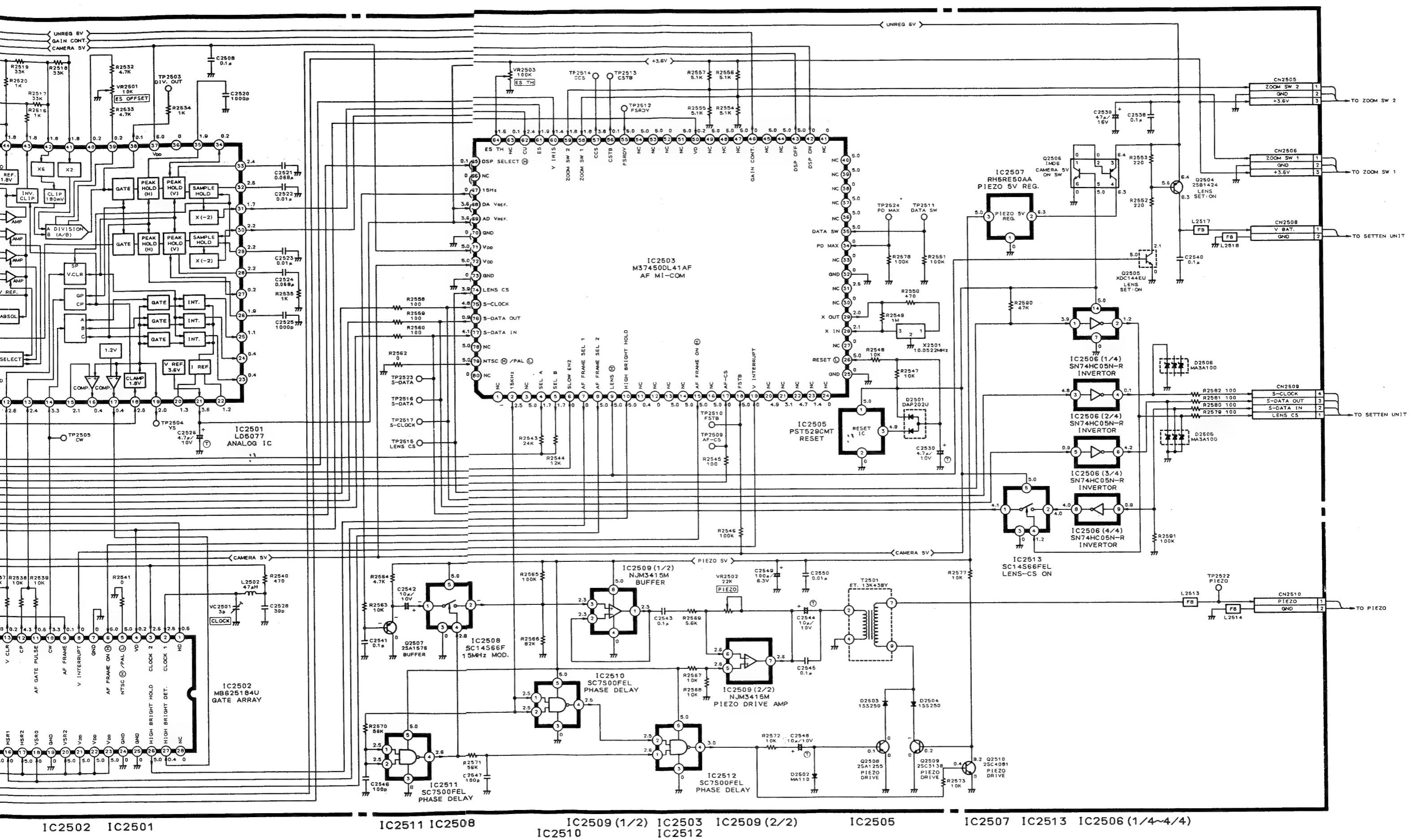
D 2 5 0 1	C - 3
D 2 5 0 2	B - 1
D 2 5 0 5	C - 4
D 2 5 0 6	C - 4
I C 2 5 0 4	F - 4
I C 2 5 0 5	C - 3
I C 2 5 0 7	A - 3
I C 2 5 0 8	B - 3
I C 2 5 1 0	B - 3
I C 2 5 1 1	B - 3
I C 2 5 1 2	B - 2
I C 2 5 1 3	B - 3
I C 2 5 1 4	C - 2
I C 2 5 1 5	E - 2
I C 2 5 1 6	E - 2
I C 2 5 1 7	C - 3
O 2 5 0 1	F - 3
O 2 5 0 2	E - 4
O 2 5 0 3	F - 4
O 2 5 0 4	B - 4
O 2 5 0 5	B - 4
O 2 5 0 6	A - 4
O 2 5 0 7	B - 3



(C)

AUTO FOCUS P.C.B.





PROCESS 1 P.C.B. (REF. NO.2XXX~)

< NOTICE >

The PROCESS 1 P.C.B. consists of four layers.

(Soldering, Ground, Power Supply and Component.)

As the Signal Pattern which connected in the layers
of Ground and Power Supply are omitted here, please

refer to the Circuit Diagram.

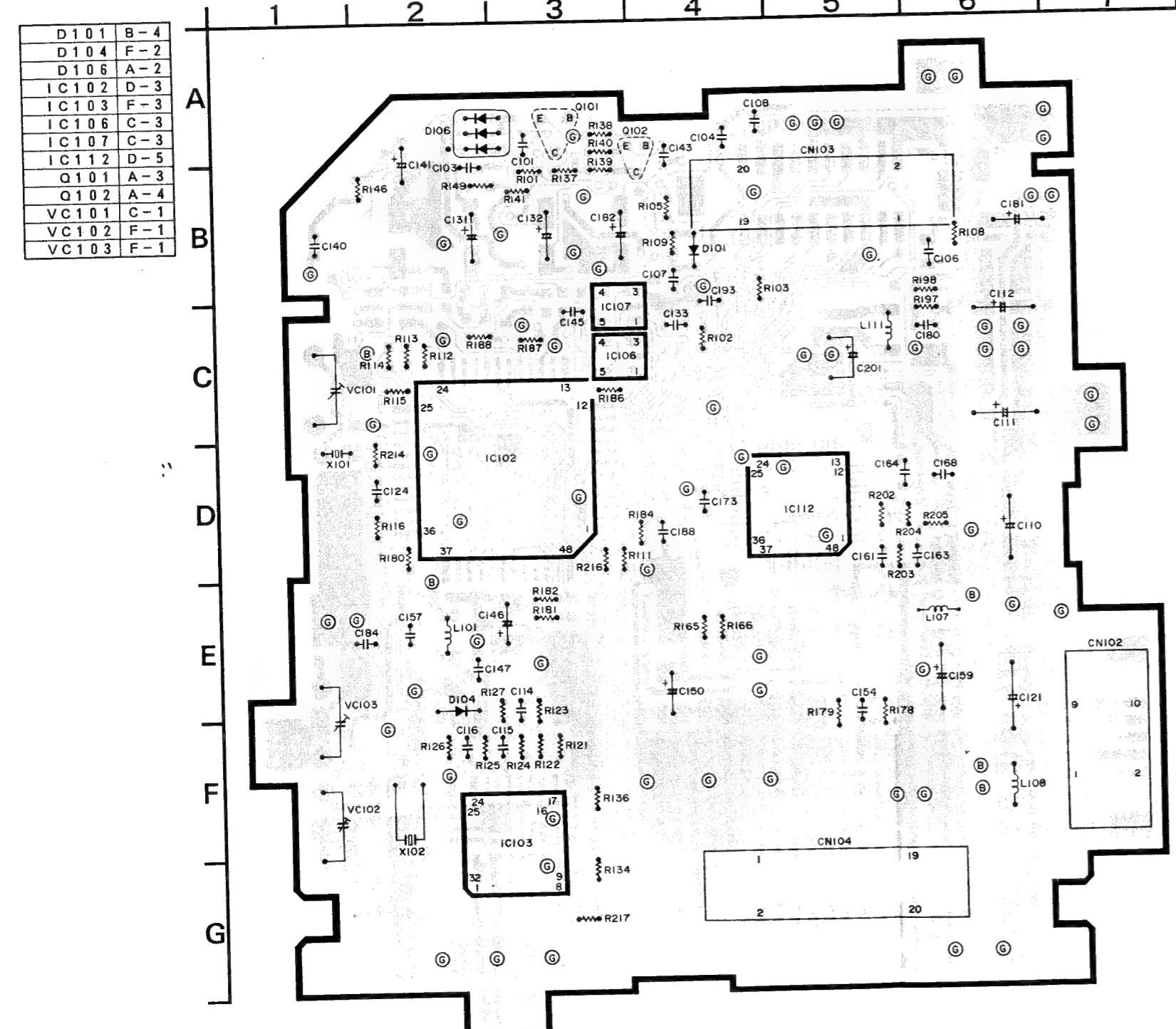
* Through-hole marks on each P.C.B. denote :

○ : Soldering side ↔ Component side

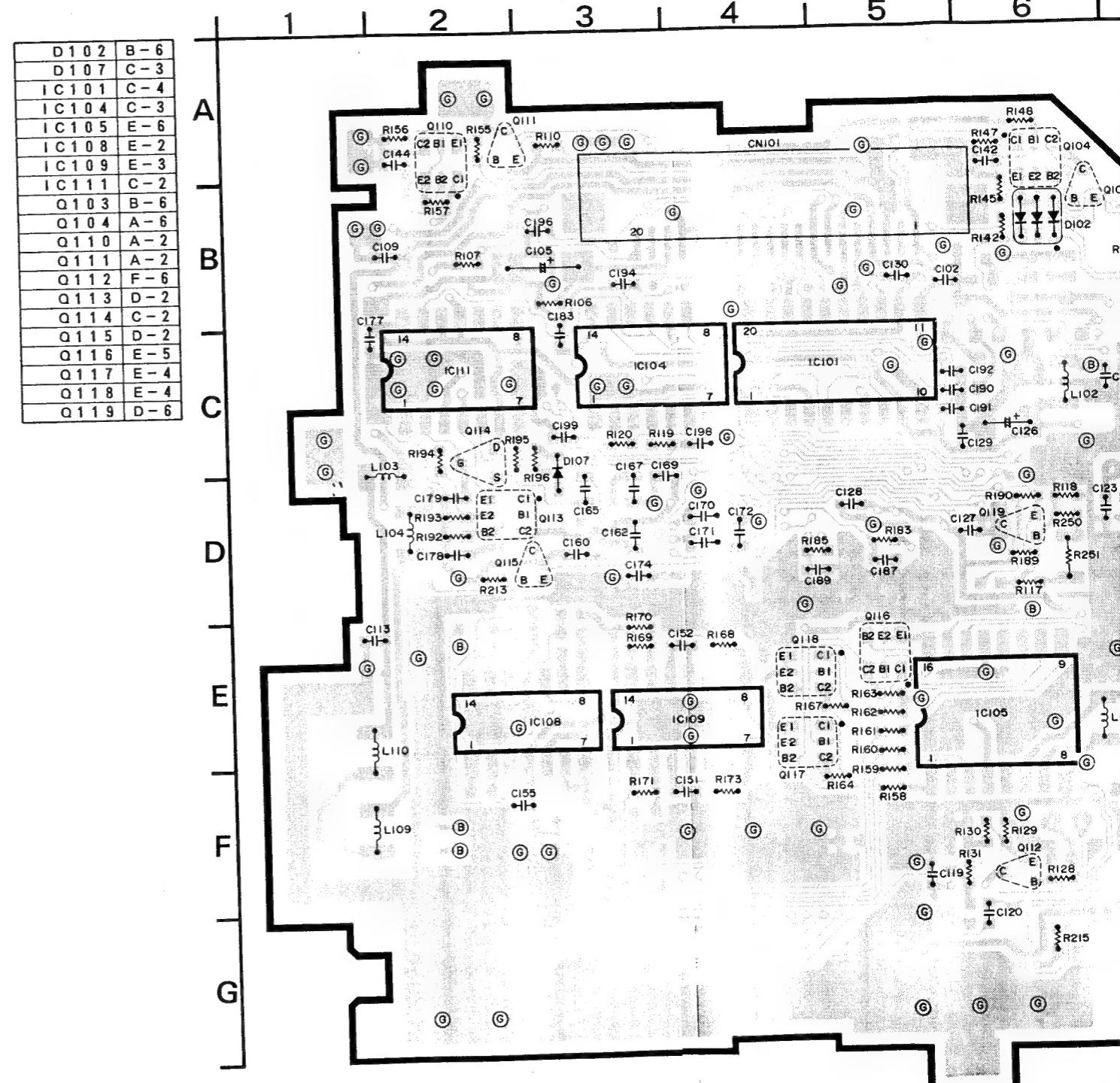
(G) : Soldering side (Component side) ↔ Ground

(B) : Soldering side (Component side) ↔ Power Supply

(COMPONENT SIDE)



(SOLDERING SIDE)



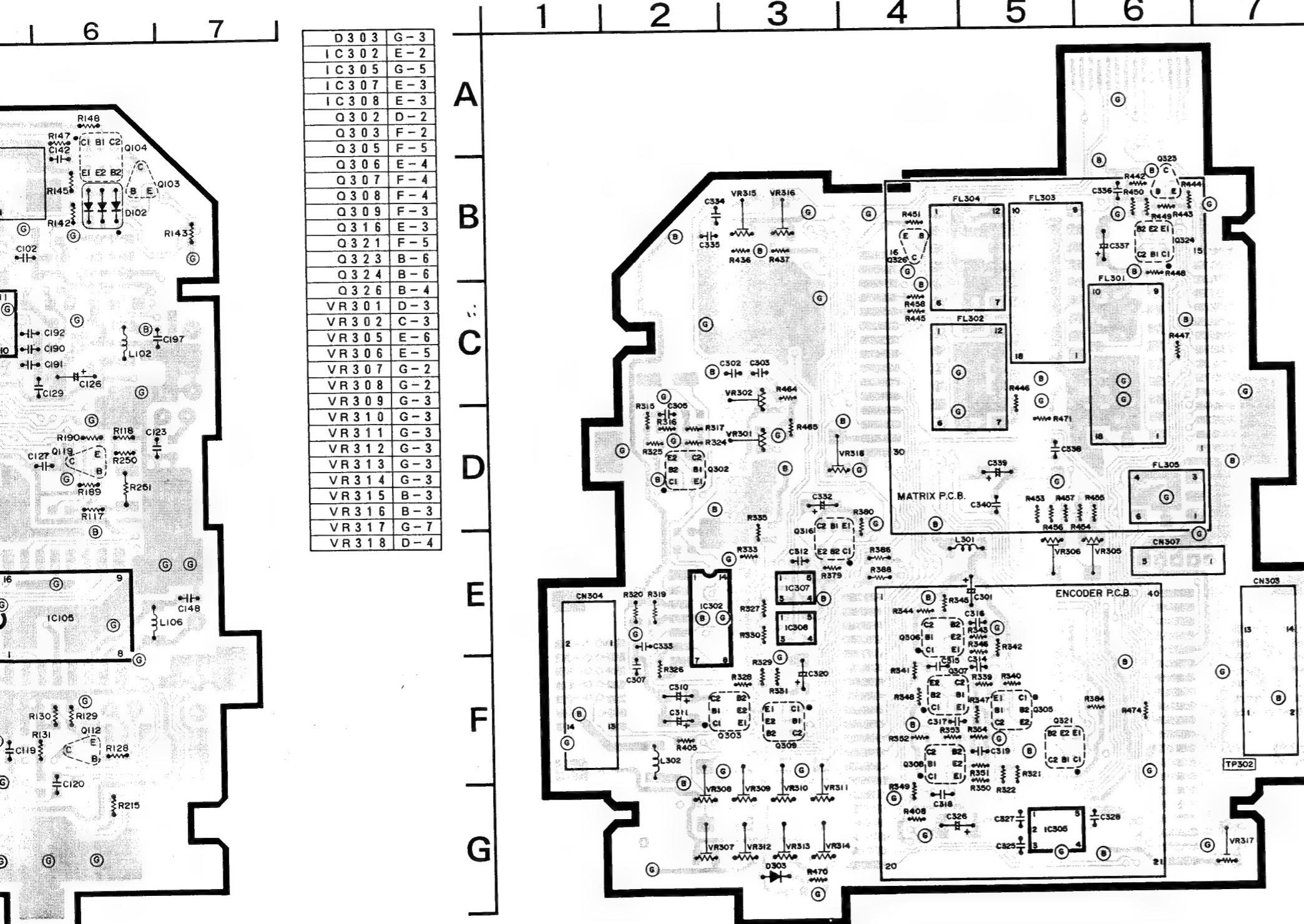
PROCESS 2 P.C.B. (REF. NO.2XXX~)

< NOTICE >

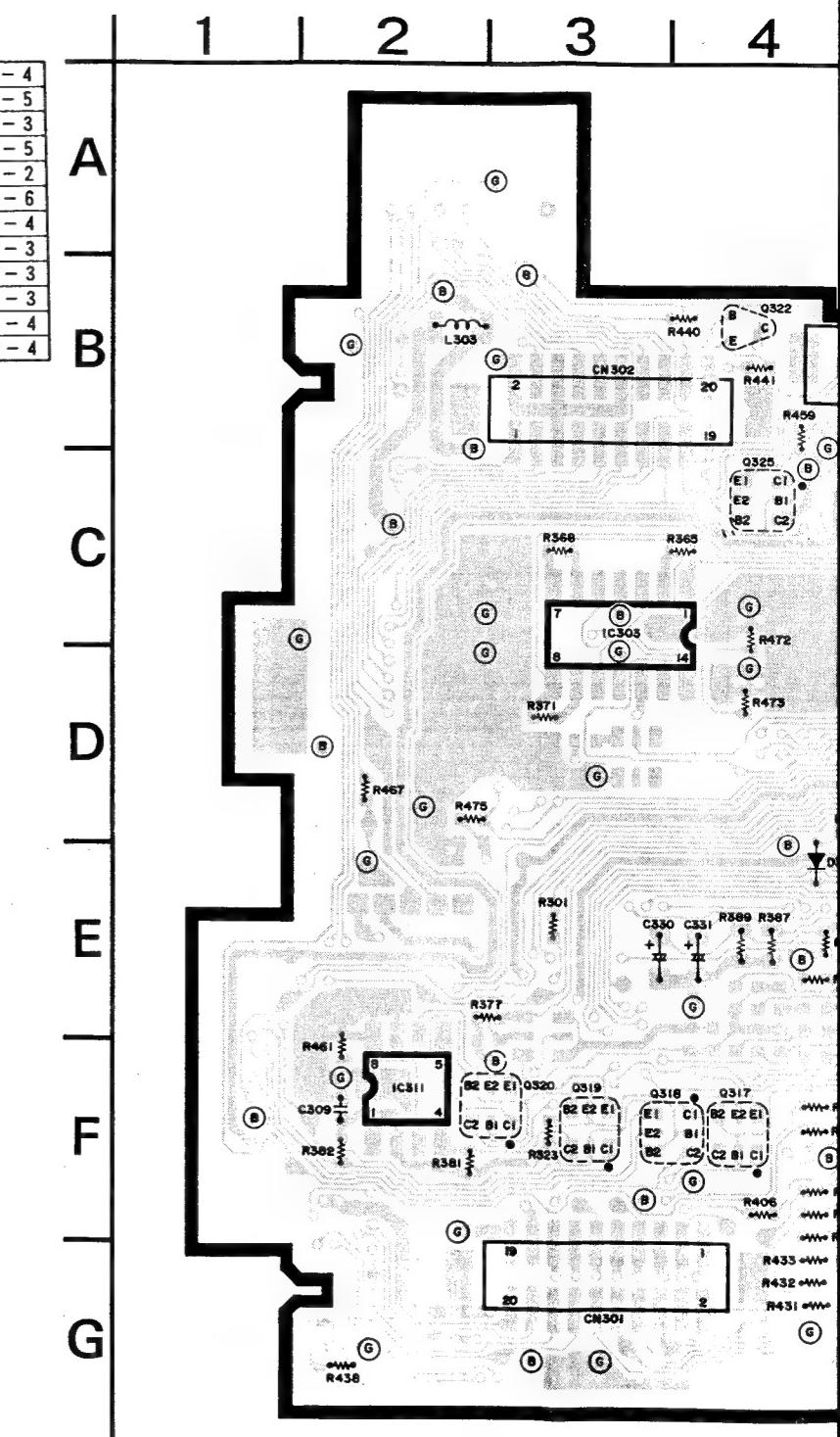
The PROCESS 2 P.C.B. consists of four layers.
(Soldering, Ground, Power Supply and Component.)
As the Signal Pattern which connected in the layers
of Ground and Power Supply are omitted here, please
refer to the Circuit Diagram.

※ Through-hole marks on each P.C.B. denote :
○ : Soldering side ↔ Component side
◎ : Soldering side (Component side) ↔ Ground
■ : Soldering side (Component side) ↔ Power Supply

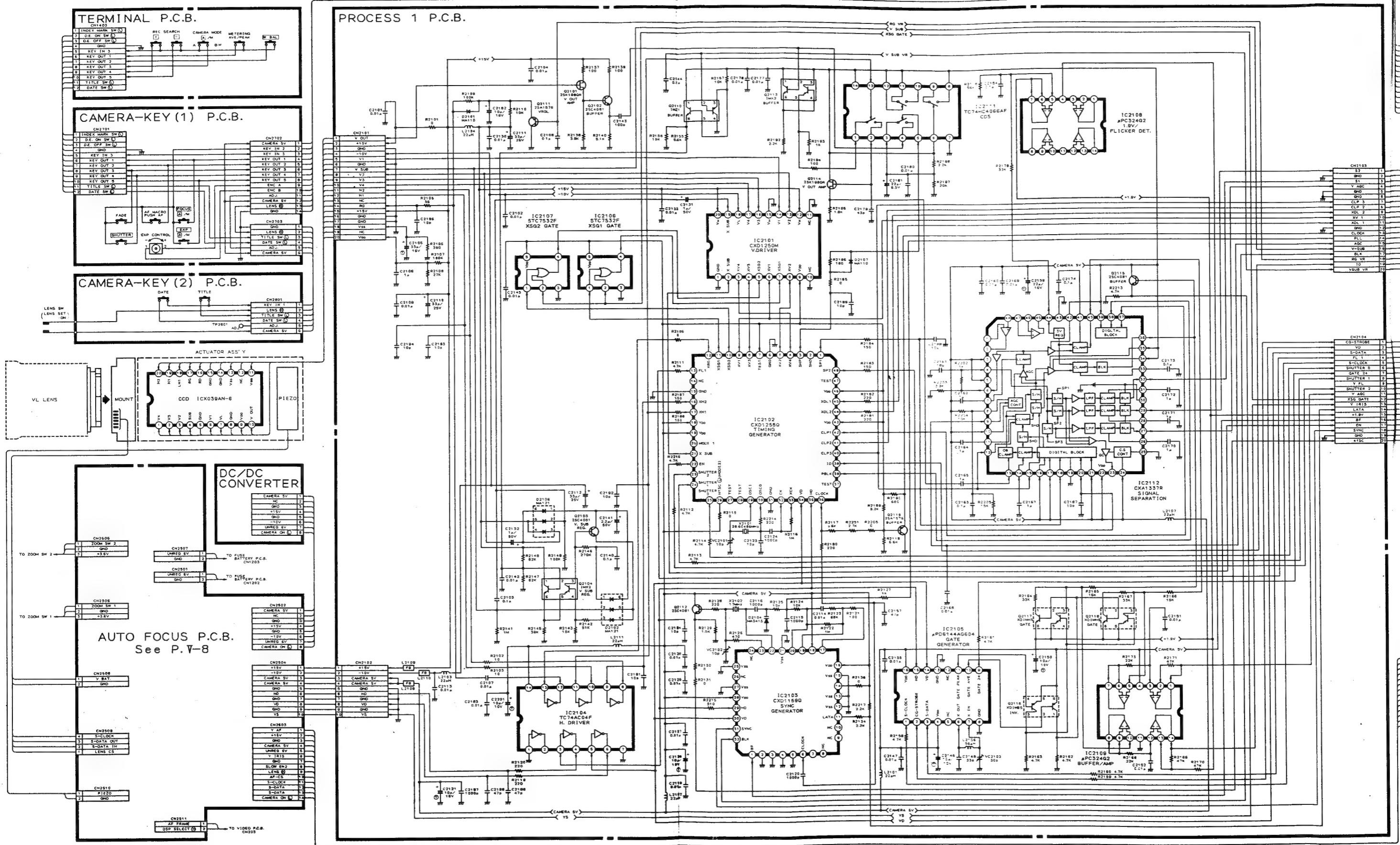
(COMPONENT SIDE)



(SOLDERING SIDE)



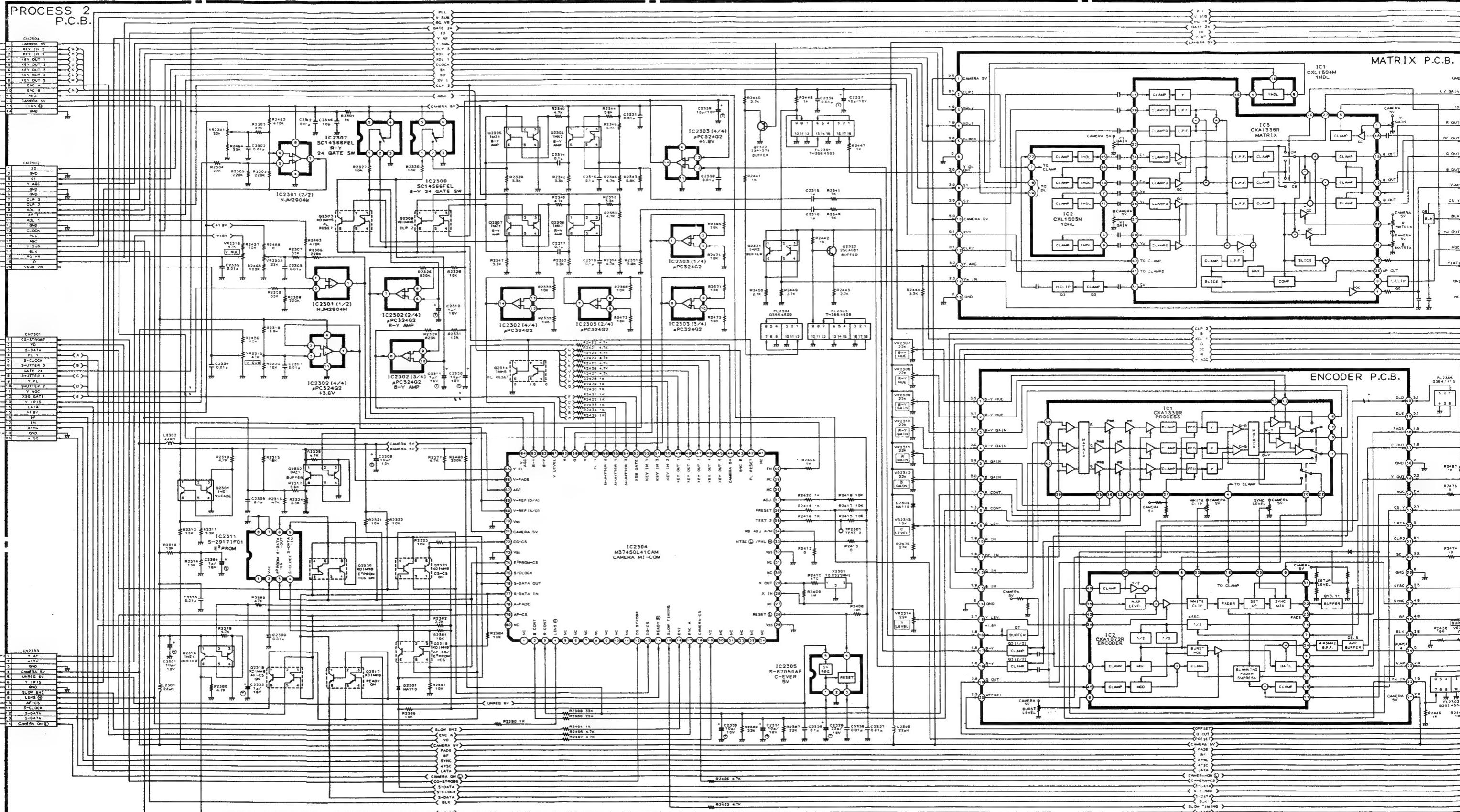
PROCESS 1, 2 P.C.B.



PROCESS 2
P.C.B.

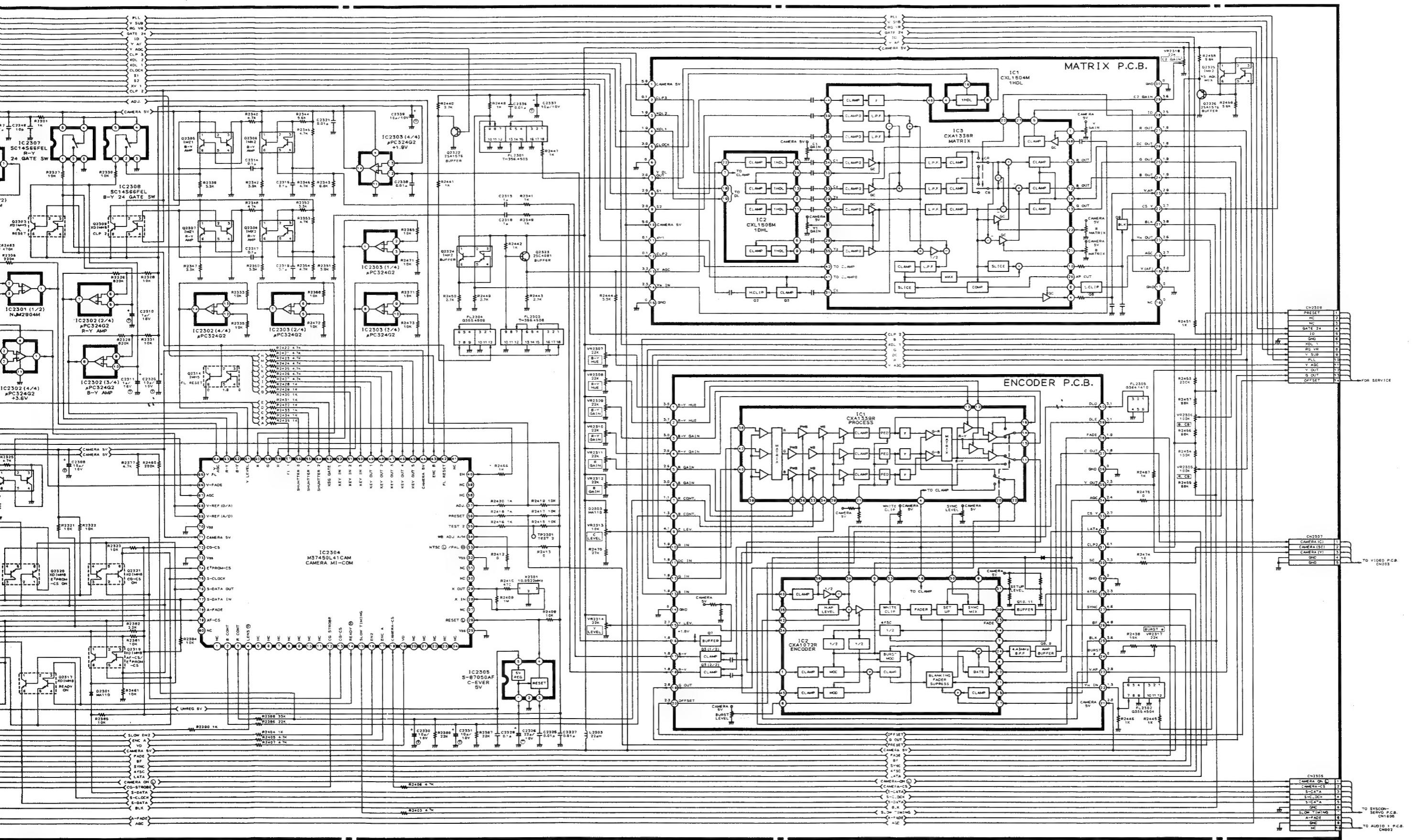
1

Nov. 1993



IC2301 (11/2, 2/2) IC2307 IC2308
IC2311 IC2302 (2/4, 3/4, 4/4) IC2304 IC2303 (1/4, 3/4, 4/4)

IC2305



1/2, 2/2) IC2307 IC2308
IC2302 (2/4, 3/4, 4/4)

IC2302 (4/4) IC2303 (2/4) IC2304 IC2303 (1/4, 3/4, 4/4) IC23

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V-10

' IDEO P.C.B. (COMPONENT SIDE)

< NOTICE >

The VIDEO P.C.B. consists of four layers.

Soldering, Ground, Power Supply and Component.)

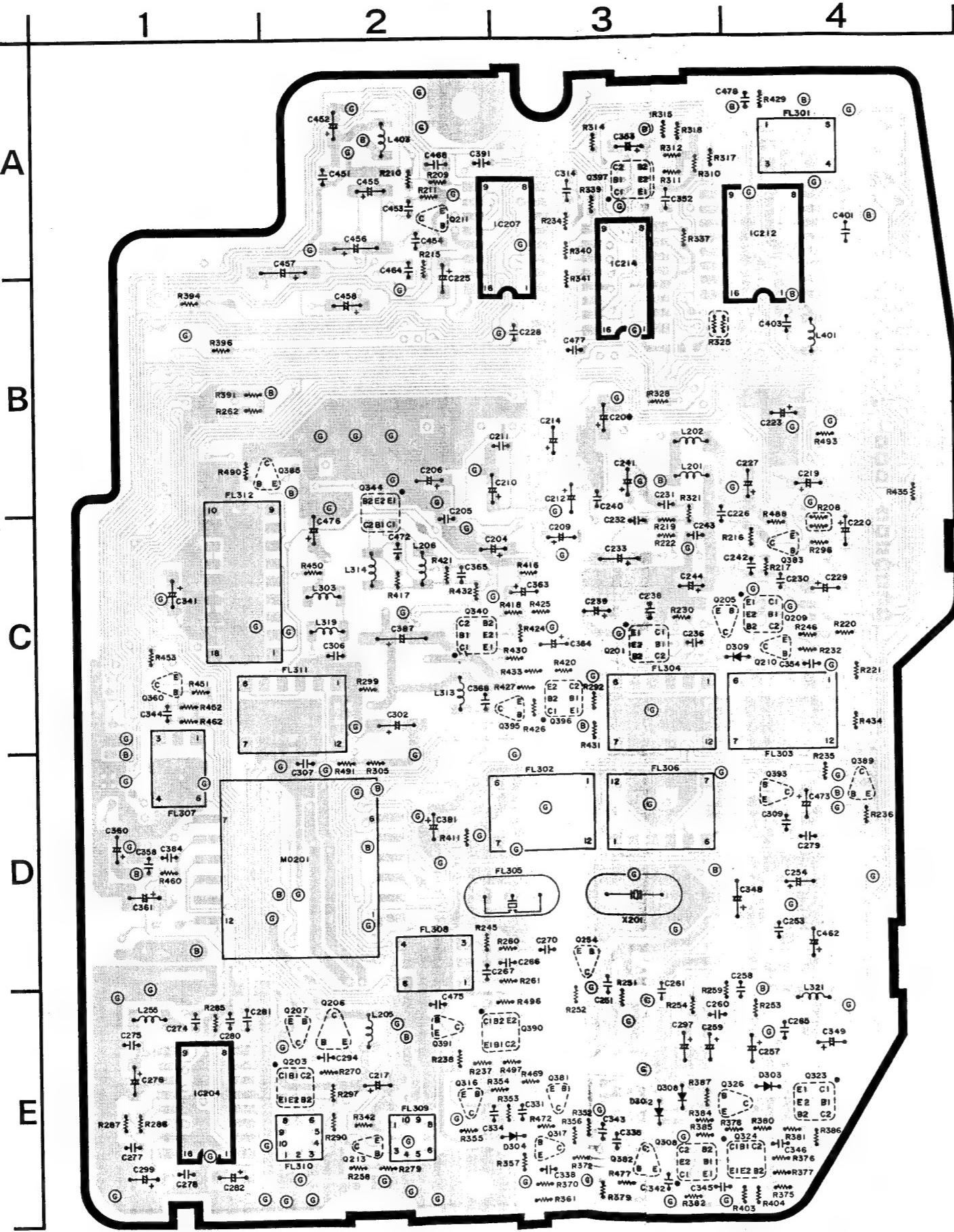
As the Signal Pattern which connected in the layers of Ground and Power Supply are omitted here, please refer to the Circuit Diagram.

Through-hole marks on each P.C.B. denote:

○ : Soldering side ↔ Component side
◎ : Soldering side (Component side) ↔ Ground

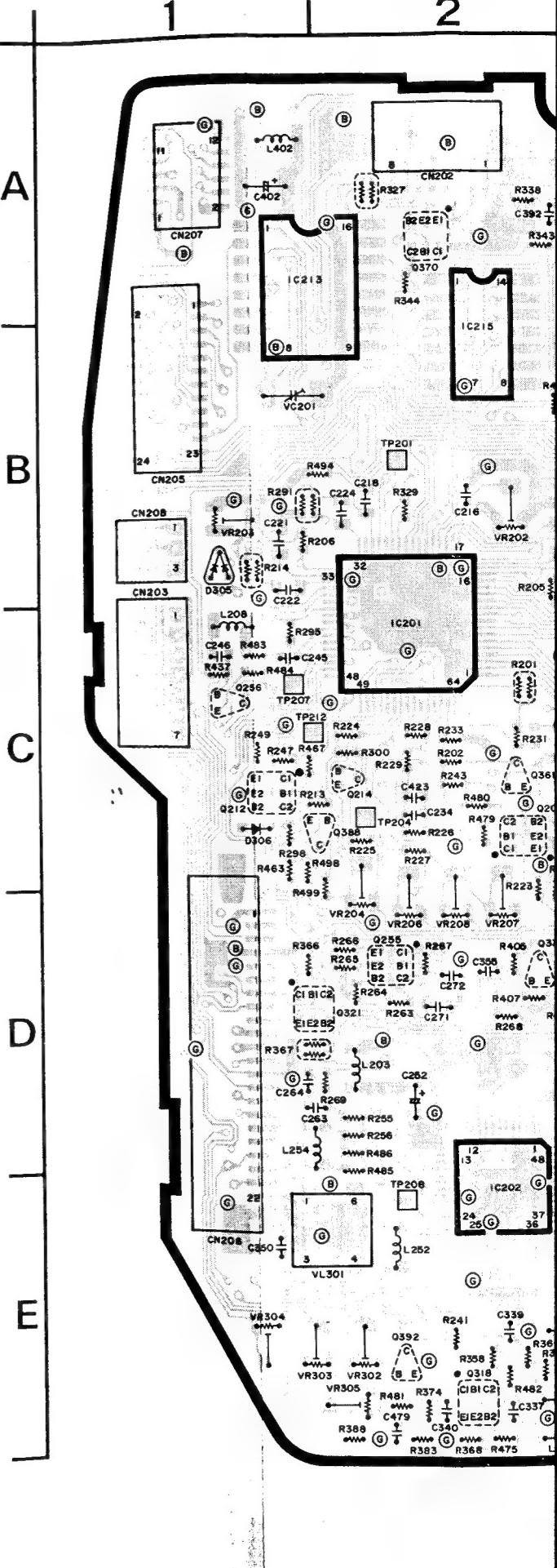
B : Soldering side (Component side) ↔ Power Supply

D 3 0 2	E - 3
D 3 0 3	E - 4
D 3 0 4	E - 3
D 3 0 8	E - 3
D 3 0 9	C - 4
I C 2 0 4	E - 1
I C 2 0 7	A - 3
I C 2 1 2	A - 4
I C 2 1 4	B - 3
Q 2 0 1	C - 3
Q 2 0 3	E - 2
Q 2 0 5	C - 3
Q 2 0 6	E - 2
Q 2 0 7	E - 2
Q 2 0 9	C - 4
Q 2 1 0	C - 4
Q 2 1 1	A - 2
Q 2 1 3	E - 2
Q 2 5 4	D - 3
Q 3 0 8	E - 3
Q 3 1 6	E - 2
Q 3 1 7	E - 3
Q 3 2 3	E - 4
Q 3 2 4	E - 4
Q 3 2 6	E - 3
Q 3 4 0	C - 2
Q 3 4 4	B - 2
Q 3 6 0	C - 1
Q 3 8 1	E - 3
Q 3 8 2	E - 3
Q 3 8 3	C - 4
Q 3 8 5	B - 1
Q 3 8 9	D - 4
Q 3 9 0	E - 3
Q 3 9 1	E - 2
Q 3 9 3	D - 4
Q 3 9 5	C - 3
Q 3 9 6	C - 3
Q 3 9 7	A - 3



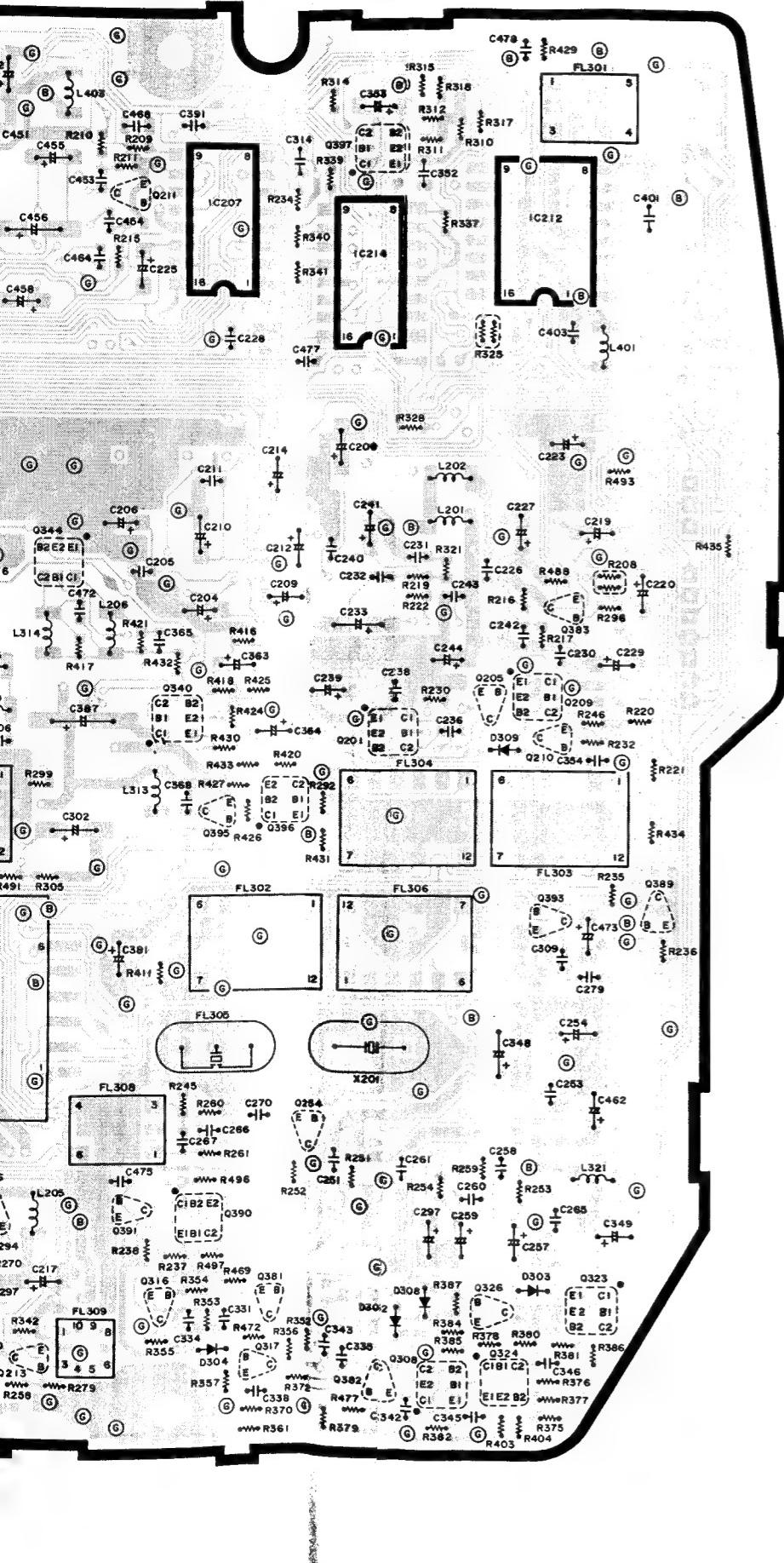
VIDEO P.C.B. (SOLDERING SIDE)

D 3 0 5	B - 1
D 3 0 6	C - 1
D 3 0 7	C - 2
D 3 1 0	B - 2
I C 2 0 1	C - 2
I C 2 0 2	E - 2
I C 2 0 5	E - 4
I C 2 0 6	C - 4
I C 2 0 8	A - 3
I C 2 1 3	A - 1
I C 2 1 5	B - 2
I C 3 0 1	D - 4
I C 3 0 3	A - 3
Q 2 0 4	C - 2
Q 2 0 8	D - 2
Q 2 1 2	C - 1
Q 2 1 4	C - 2
Q 2 5 5	D - 2
Q 2 5 6	C - 1
Q 2 5 7	E - 3
Q 3 0 2	C - 3
Q 3 0 3	C - 3
Q 3 0 5	C - 3
Q 3 1 3	E - 4
Q 3 1 5	E - 3
Q 3 1 8	E - 2
Q 3 2 1	D - 1
Q 3 2 7	D - 3
Q 3 2 8	D - 3
Q 3 3 3	D - 2
Q 3 3 4	D - 3
Q 3 3 6	D - 4
Q 3 3 7	E - 3
Q 3 3 8	E - 3
Q 3 4 6	D - 3
Q 3 4 8	B - 3
Q 3 5 1	B - 4
Q 3 5 3	B - 4
Q 3 6 1	C - 2
Q 3 7 0	A - 2
Q 3 7 7	E - 3
Q 3 7 8	E - 3
Q 3 8 0	E - 3
Q 3 8 6	D - 3
Q 3 8 7	D - 3
Q 3 8 8	C - 1
Q 3 9 2	E - 2
VC 2 0 1	B - 1
VR 2 0 2	B - 2
VR 2 0 3	B - 1
VR 2 0 4	D - 2
VR 2 0 6	D - 2
VR 2 0 7	D - 2
VR 2 0 8	D - 2
VR 2 1 0	E - 4
VR 3 0 2	E - 2
VR 3 0 3	E - 1
VR 3 0 4	E - 1
VR 3 0 5	E - 2
VR 3 0 6	C - 3
VR 3 0 8	C - 4
VR 3 0 9	C - 3
VR 3 1 0	D - 3



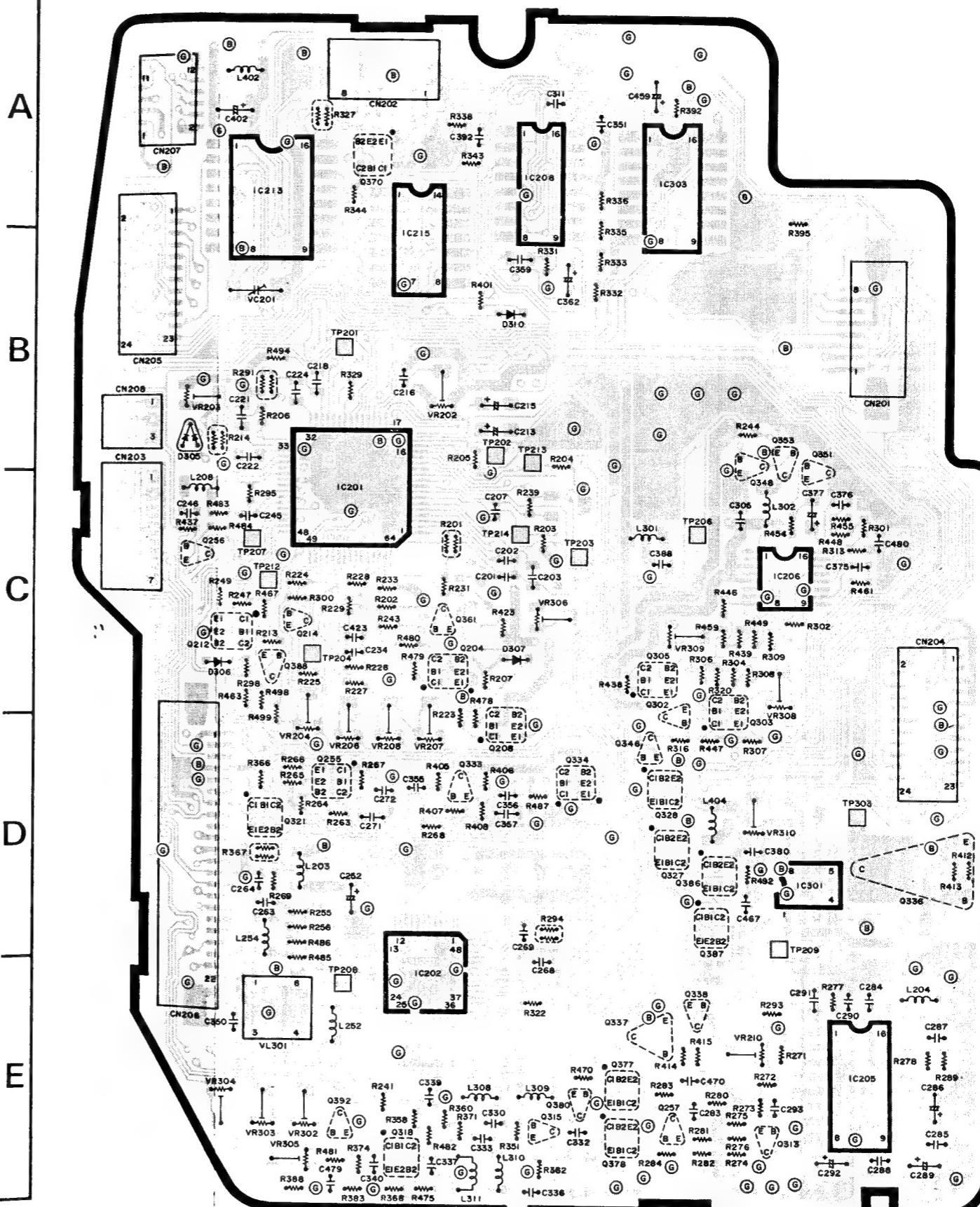
VIDEO P.C.B. (SOLDERING SIDE)

A horizontal number line with tick marks at integer intervals. The numbers 2, 3, and 4 are labeled above the line. There are two tick marks between 2 and 3, and one tick mark between 3 and 4.

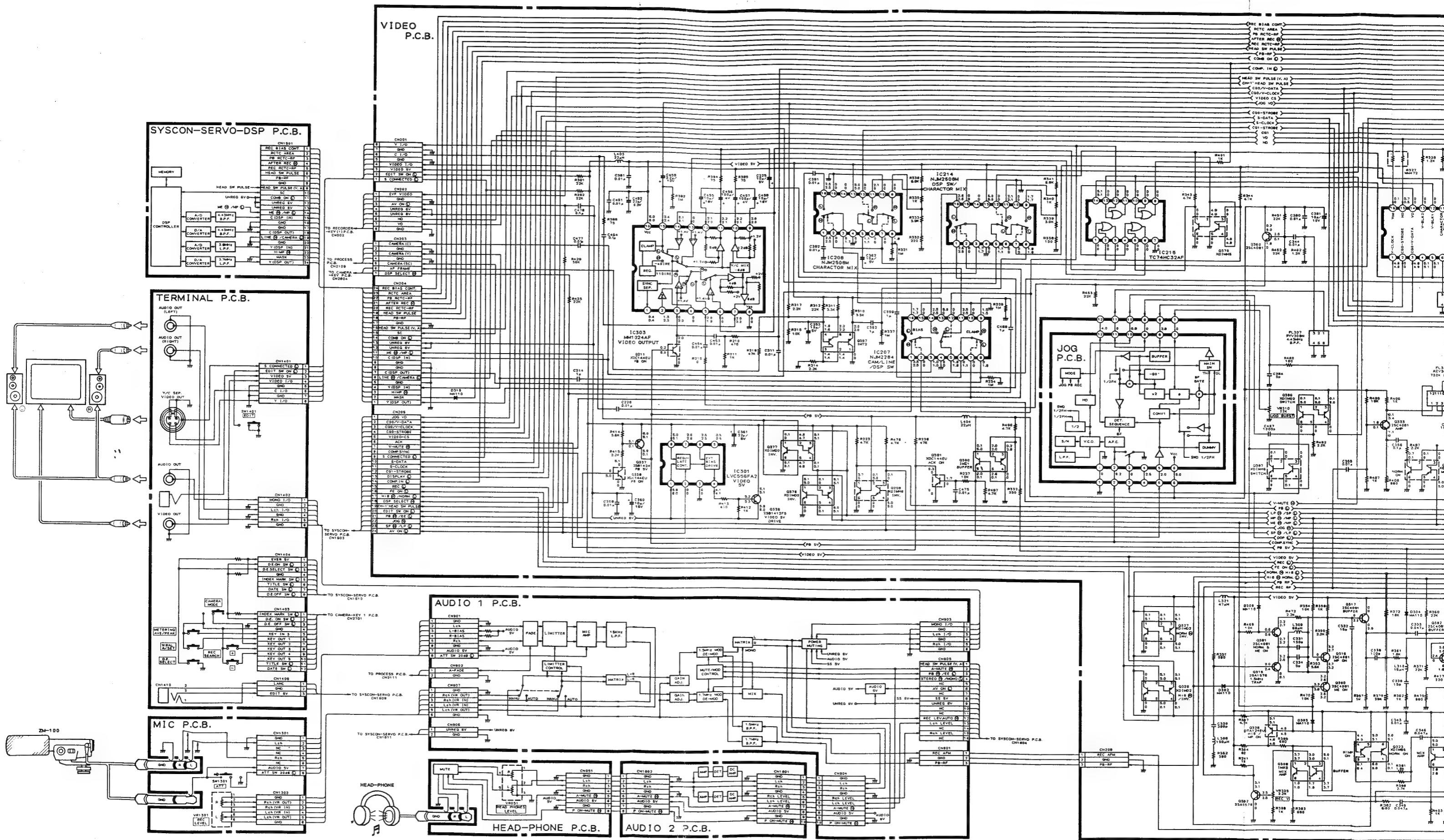


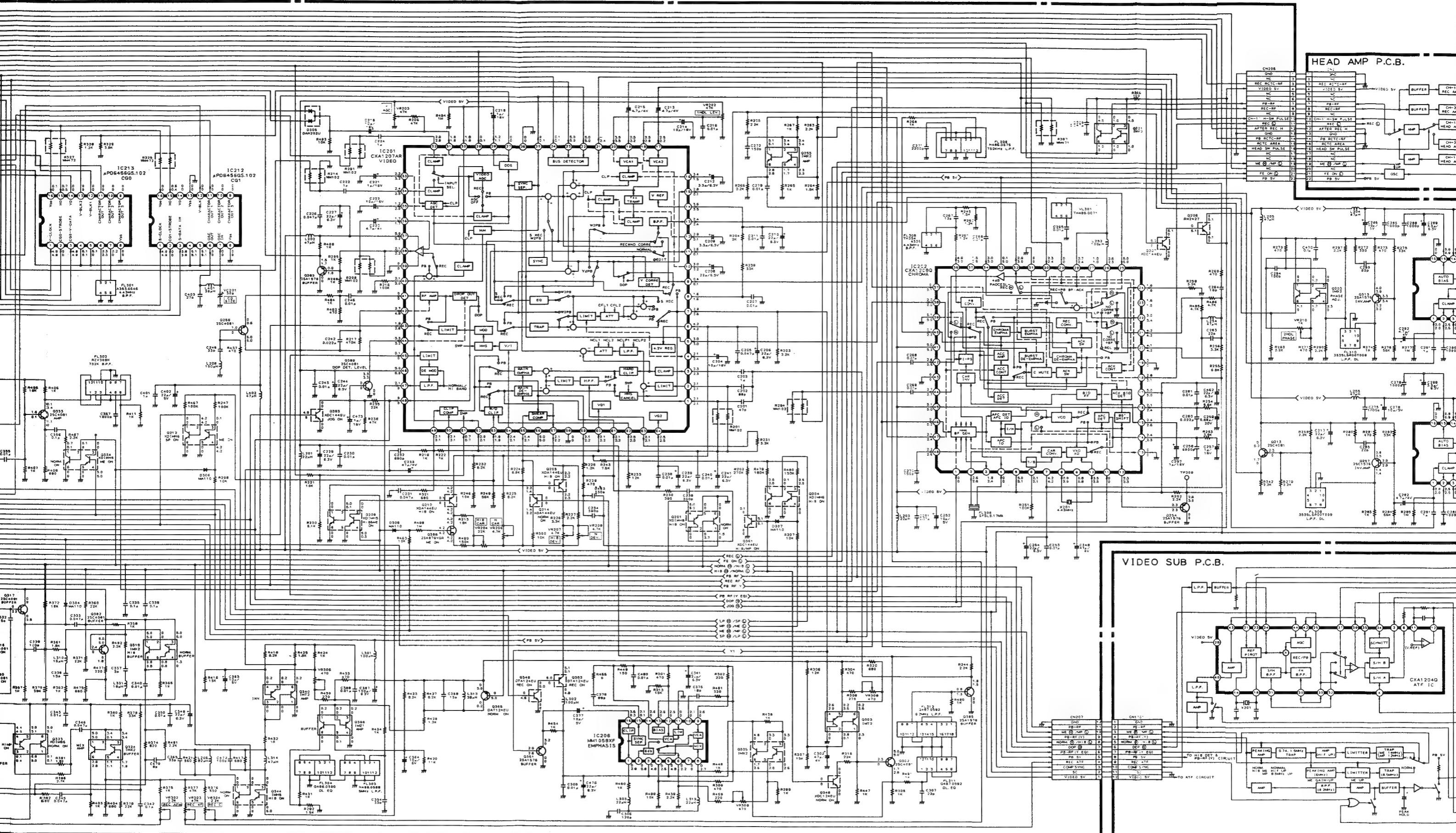
D 305	B - 1
D 306	C - 1
D 307	C - 2
D 310	B - 2
I C 201	C - 2
I C 202	E - 2
I C 205	E - 4
I C 206	C - 4
I C 208	A - 3
I C 213	A - 1
I C 215	B - 2
I C 301	D - 4
I C 303	A - 3
Q 204	C - 2
Q 208	D - 2
Q 212	C - 1
Q 214	C - 2
Q 255	D - 2
Q 256	C - 1
Q 257	E - 3
Q 302	C - 3
Q 303	C - 3
Q 305	C - 3
Q 313	E - 4
Q 315	E - 3
Q 318	E - 2
Q 321	D - 1
Q 327	D - 3
Q 328	D - 3
Q 333	D - 2
Q 334	D - 3
Q 336	D - 4
Q 337	E - 3
Q 338	E - 3
Q 346	D - 3
Q 348	B - 3
Q 351	B - 4
Q 353	B - 4
Q 361	C - 2
Q 370	A - 2
Q 377	E - 3
Q 378	E - 3
Q 380	E - 3
Q 386	D - 3
Q 387	D - 3
Q 388	C - 1
Q 392	E - 2
VC 201	B - 1
VR 202	B - 2
VR 203	B - 1
VR 204	D - 2
VR 206	D - 2
VR 207	D - 2
VR 208	D - 2
VR 210	E - 4
VR 302	E - 2
VR 303	E - 1
VR 304	E - 1
VR 305	E - 2
VR 306	C - 3
VR 308	C - 4
VR 309	C - 3
VR 310	D - 2

| 1 | 2 | 3 | 4



VIDEO P.C.B.





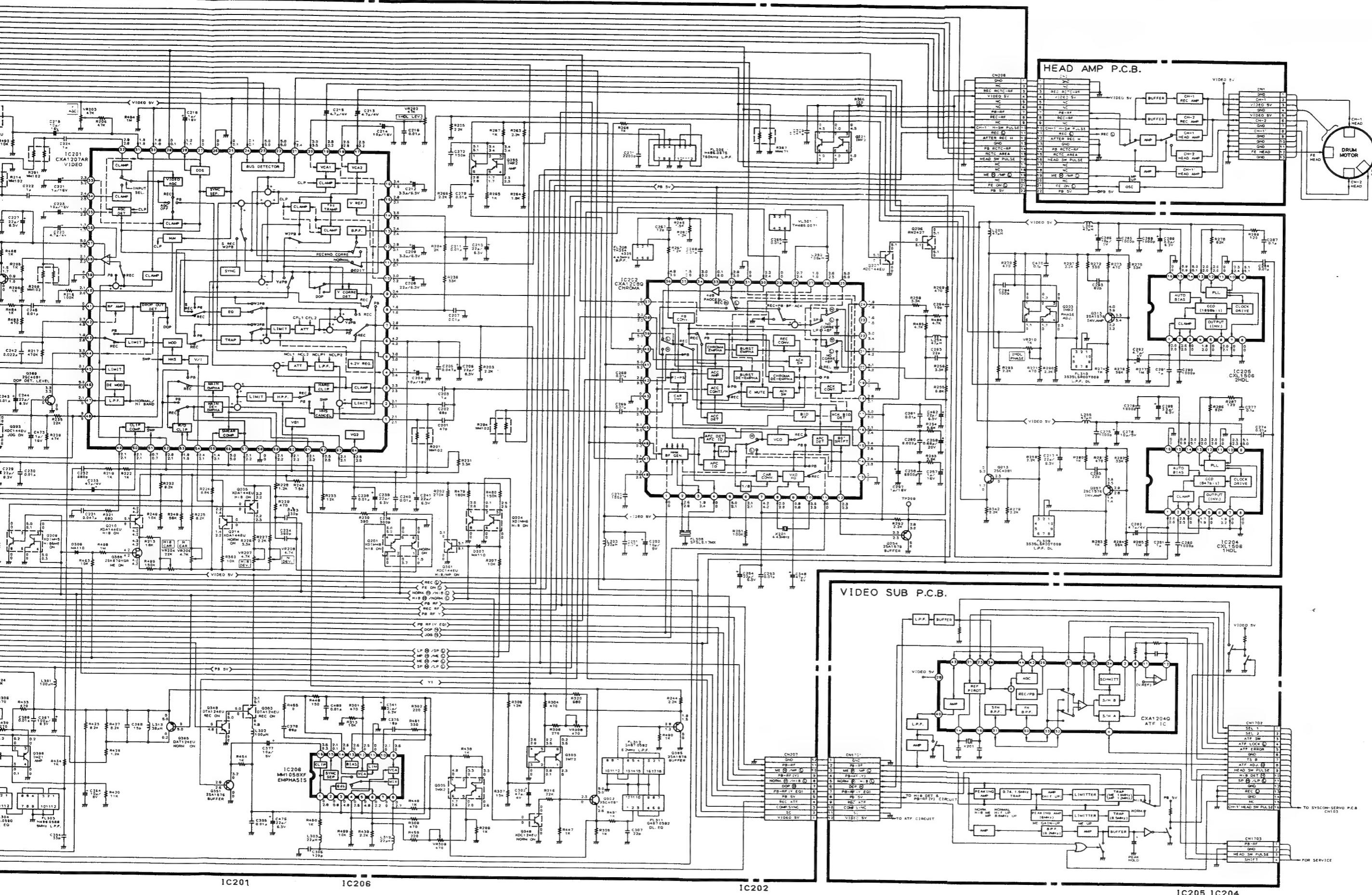
IC213

IC212

IC201

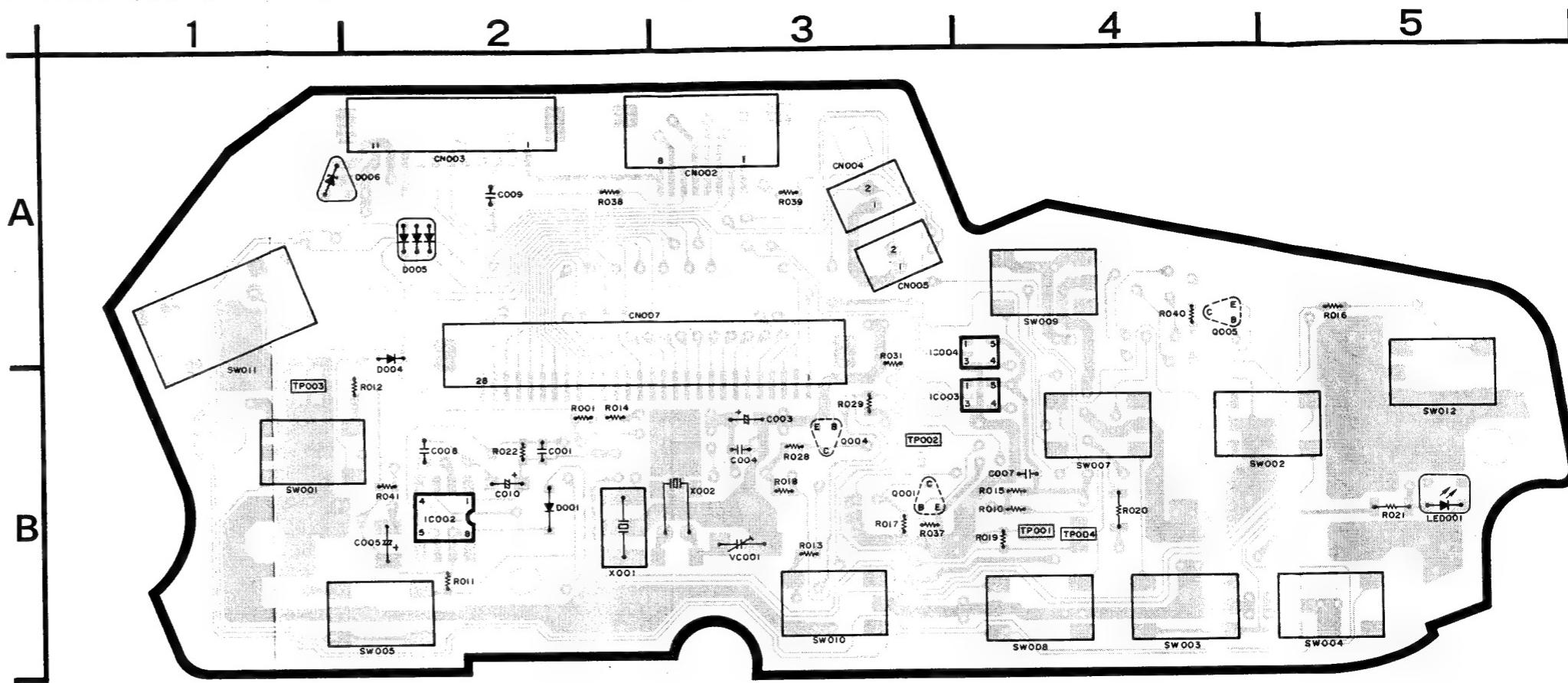
IC206

IC202



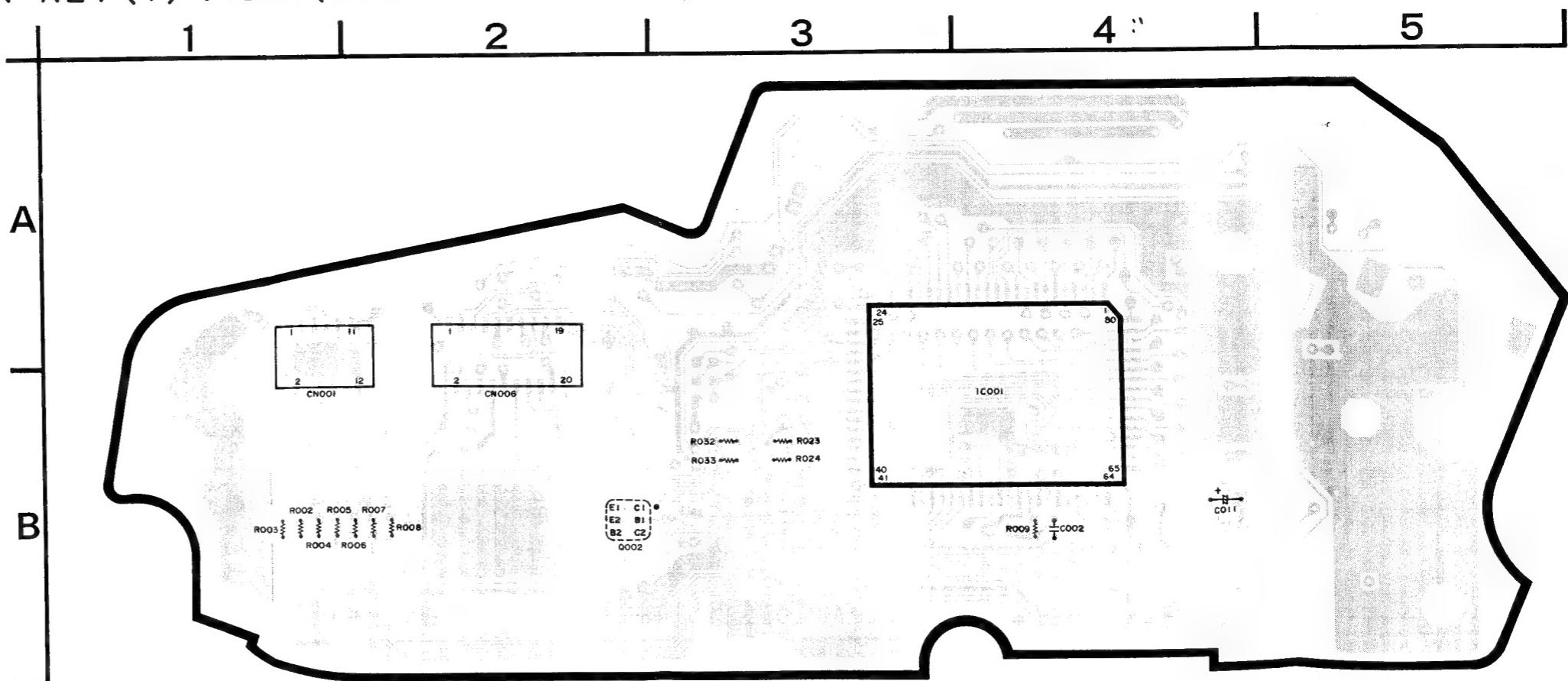
RECORDER-KEY (1) P.C.B. (COMPONENT SIDE)

D 001	B - 2
D 004	B - 2
D 005	A - 2
D 006	A - 1
I C 002	B - 2
I C 003	B - 4
I C 004	A - 4
Q 001	B - 3
Q 004	B - 3
Q 005	A - 4
V C 001	B - 3



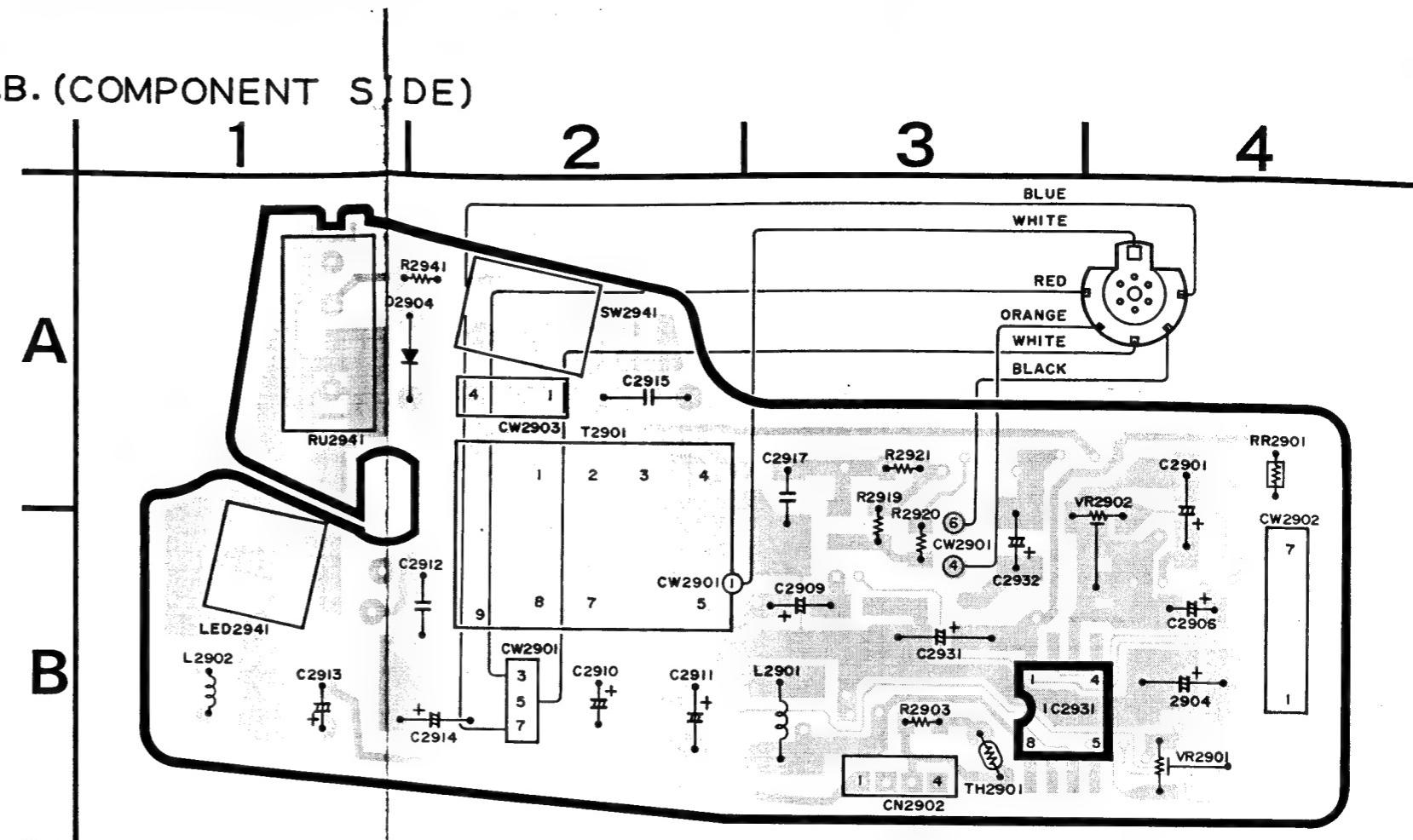
RECORDER-KEY (1) P.C.B. (SOLDERING SIDE)

I C 001	B - 4
Q 002	B - 2



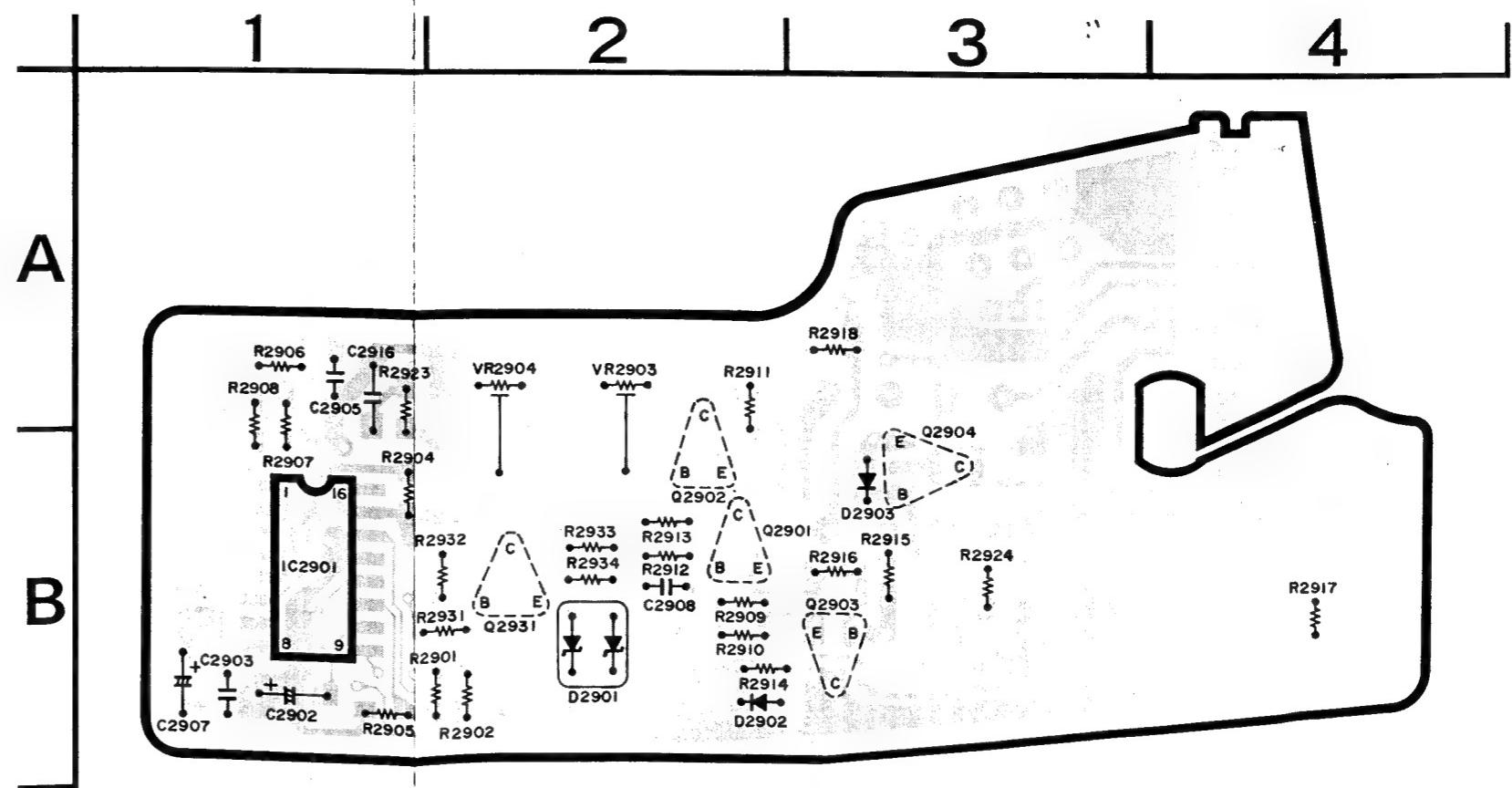
EVF P.C.B. (COMPONENT SIDE)

D 2904	A-1
I C 2931	B-3
VR 2901	B-4
VR 2902	B-4

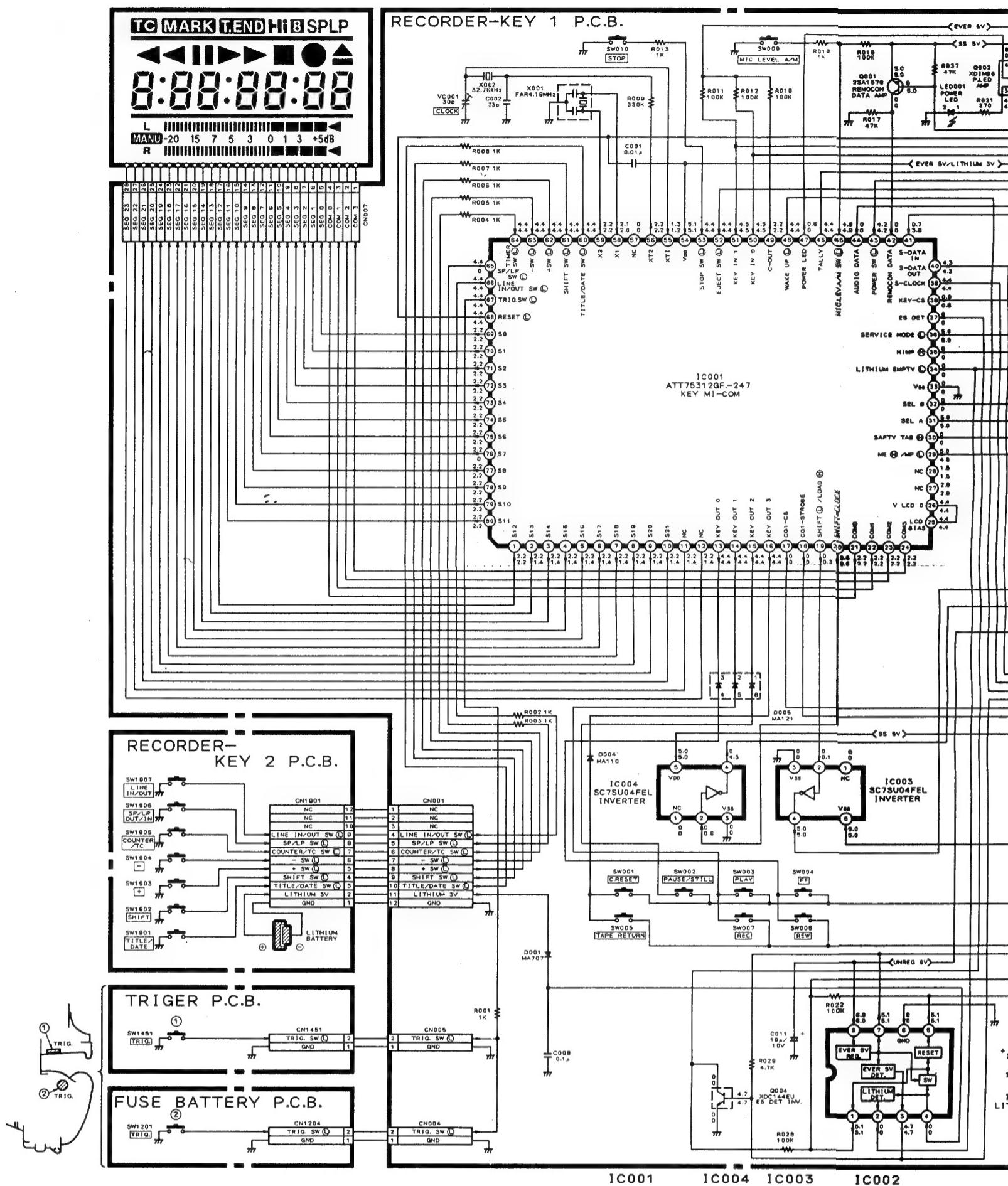


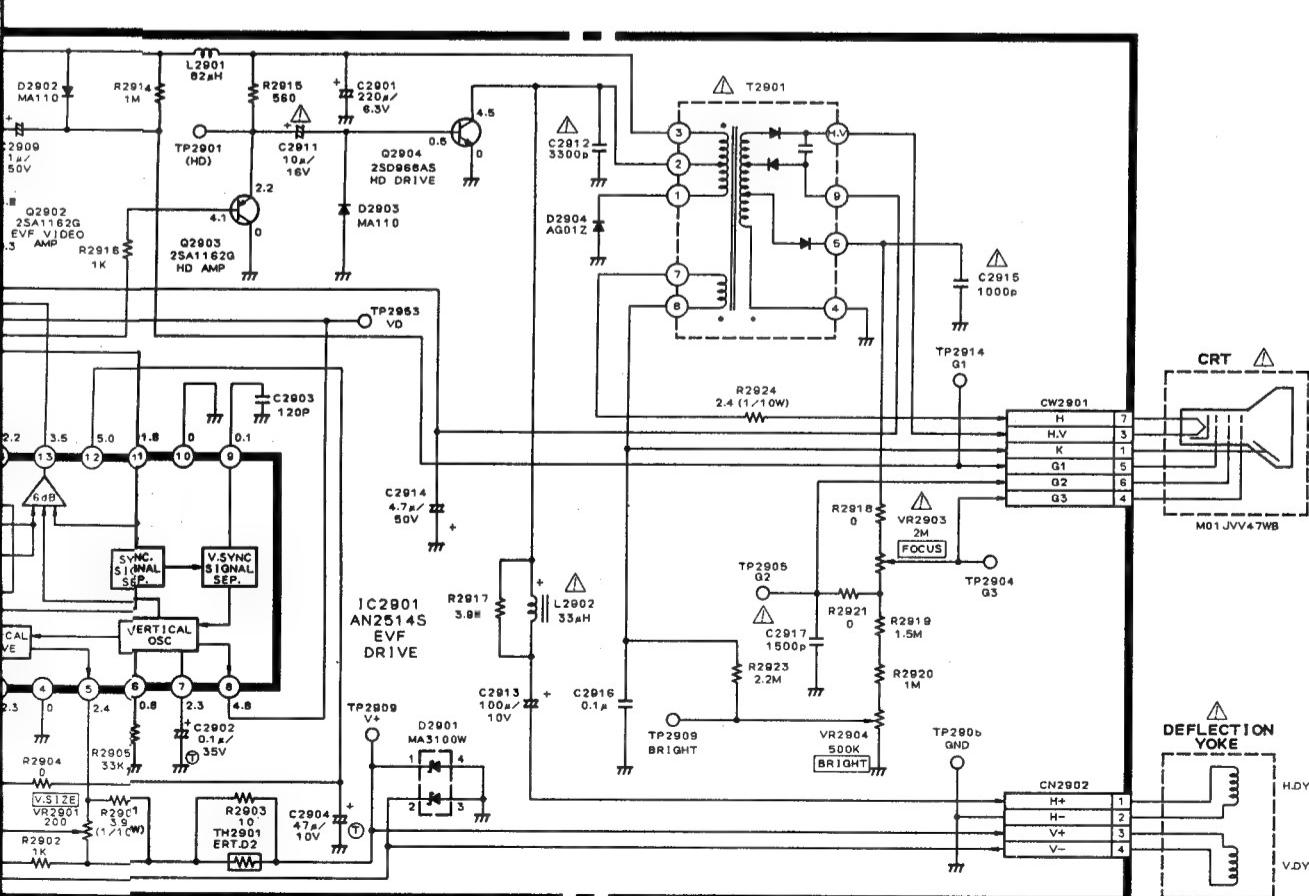
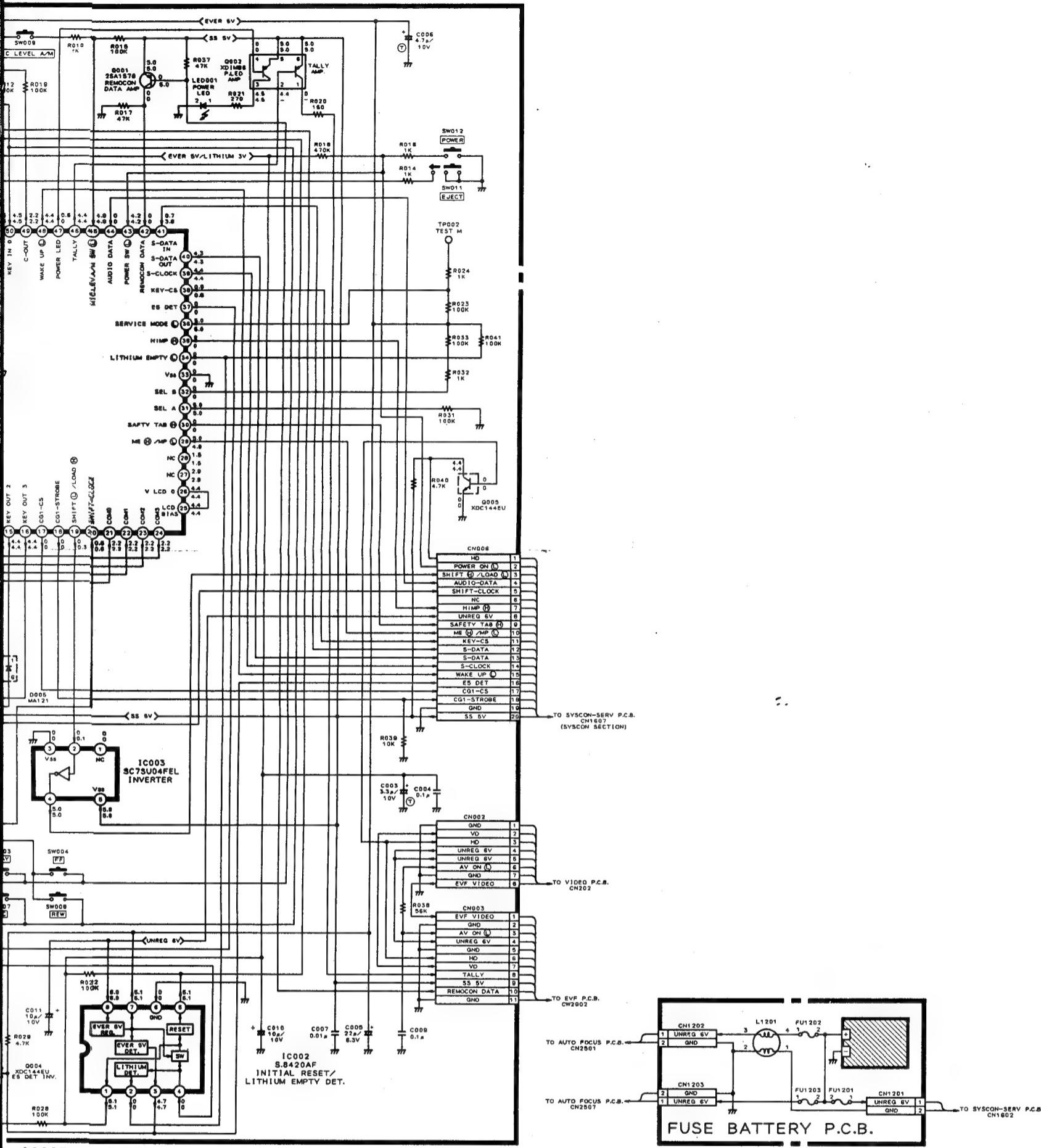
EVF P.C.B. (SOLDERING SIDE)

D	2	9	0	1	B - 2	
D	2	9	0	2	B - 2	
D	2	9	0	3	B - 3	
I	C	2	9	0	1	B - 1
Q	2	9	0	1	B - 2	
Q	2	9	0	2	B - 2	
Q	2	9	0	3	B - 3	
Q	2	9	0	4	B - 3	
Q	2	9	3	1	B - 2	
V	R	2	9	0	3	A - 2
V	R	2	9	0	4	A - 2



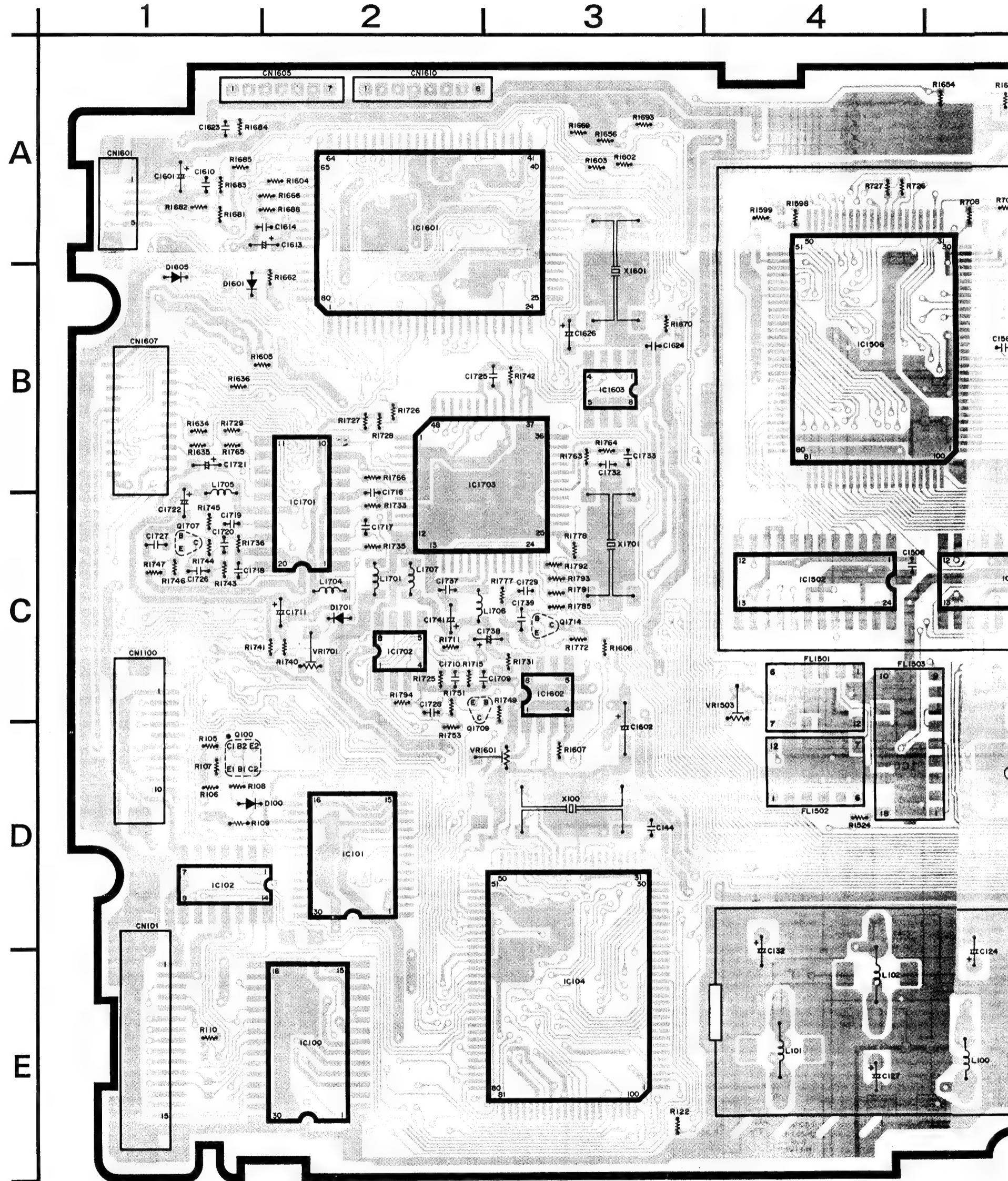
RECORDER-KEY (1) P.C.B.

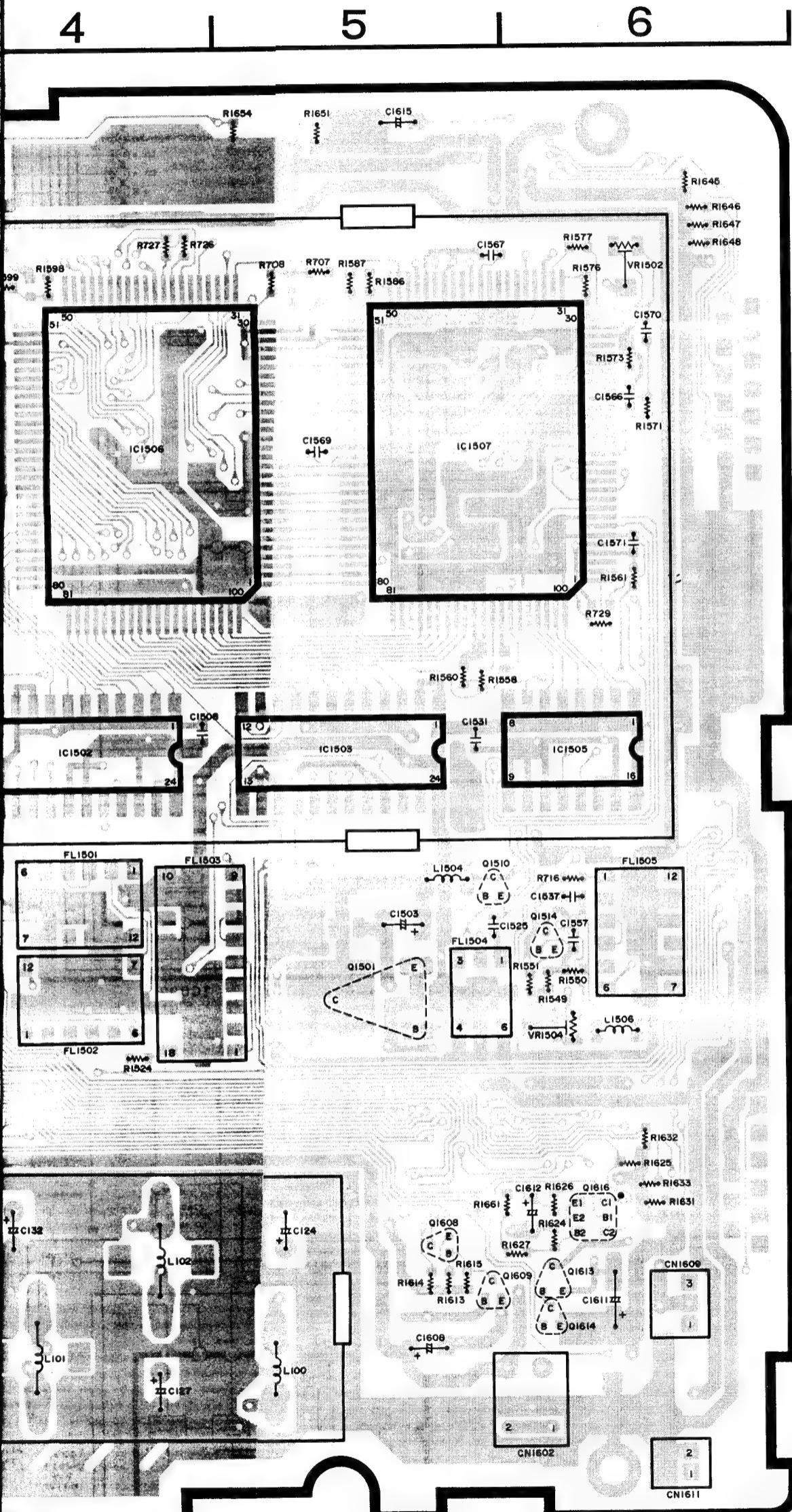




SYSCON-SERVO P.C.B. (COMPONENT SIDE)

D 1 0 0	D - 1
D 1 6 0 1	B - 1
D 1 6 0 5	B - 1
D 1 7 0 1	C - 2
I C 1 0 0	E - 2
I C 1 0 1	D - 2
I C 1 0 2	D - 1
I C 1 0 4	E - 3
I C 1 5 0 2	C - 4
I C 1 5 0 3	C - 5
I C 1 5 0 5	C - 6
I C 1 5 0 6	B - 4
I C 1 5 0 7	B - 5
Q 1 0 0	D - 1
Q 1 5 0 1	D - 5
Q 1 5 1 0	C - 5
Q 1 5 1 4	D - 6
Q 1 6 0 8	E - 5
Q 1 6 0 9	E - 5
Q 1 6 1 3	E - 6
Q 1 6 1 4	E - 6
Q 1 6 1 6	D - 6
Q 1 7 0 9	C - 2
Q 1 7 1 4	C - 3
VR 1 5 0 2	A - 6
VR 1 5 0 3	C - 4
VR 1 5 0 4	D - 6
VR 1 6 0 1	D - 3
VR 1 7 0 1	C - 2

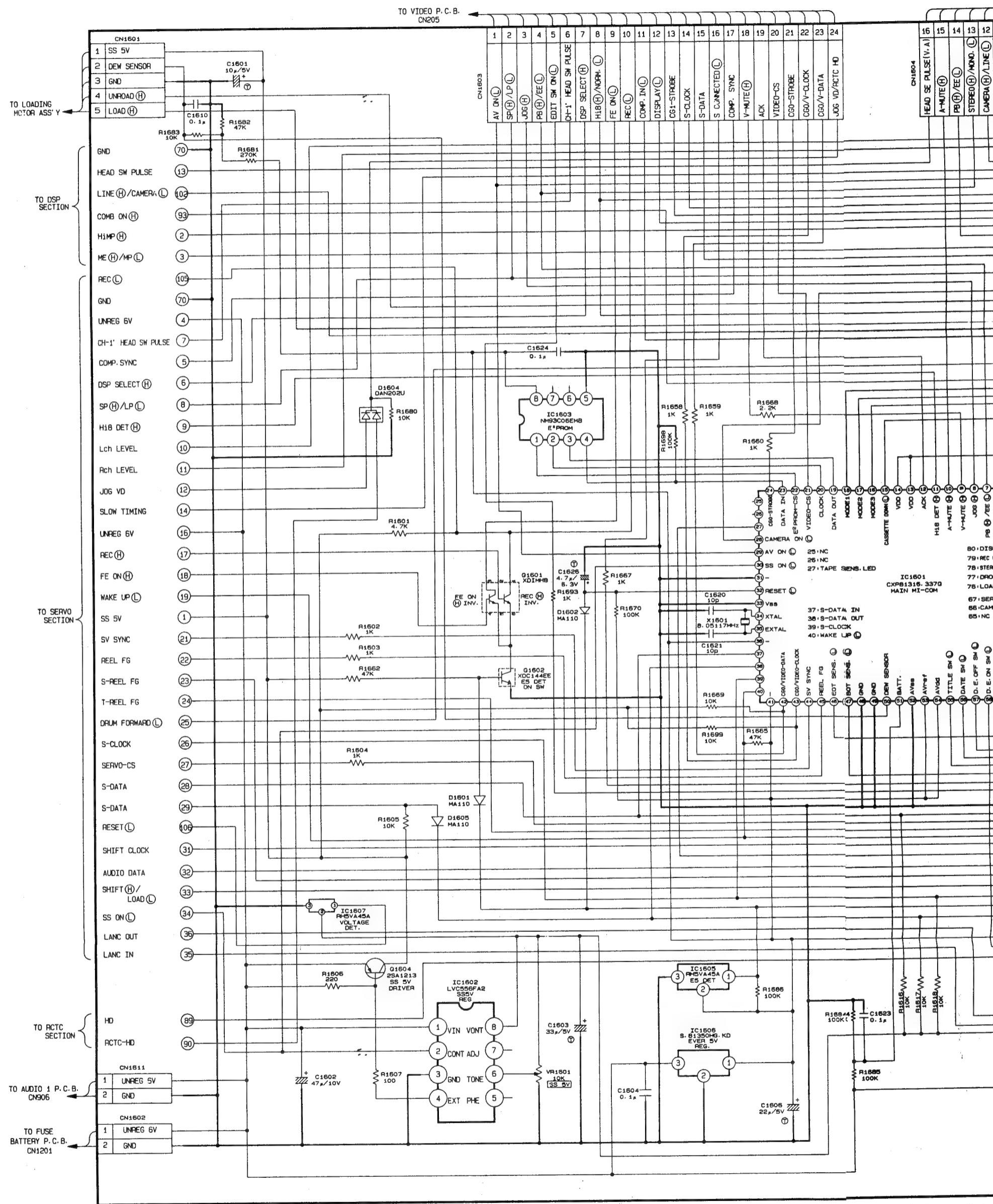


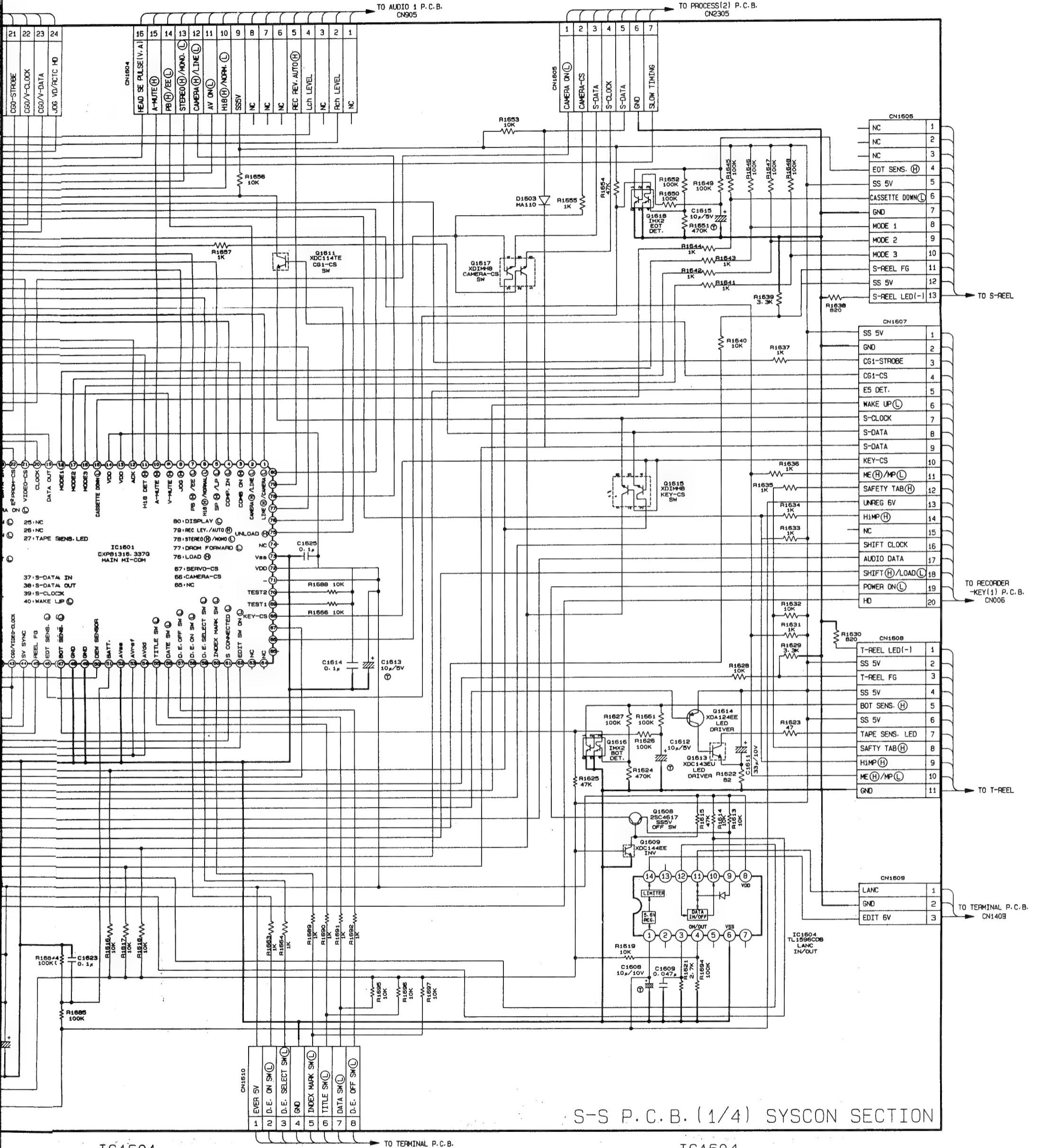


SYSCON-SERVO P.C.B.
MEASURED VALUE (V)
(SYSCON SECTION)

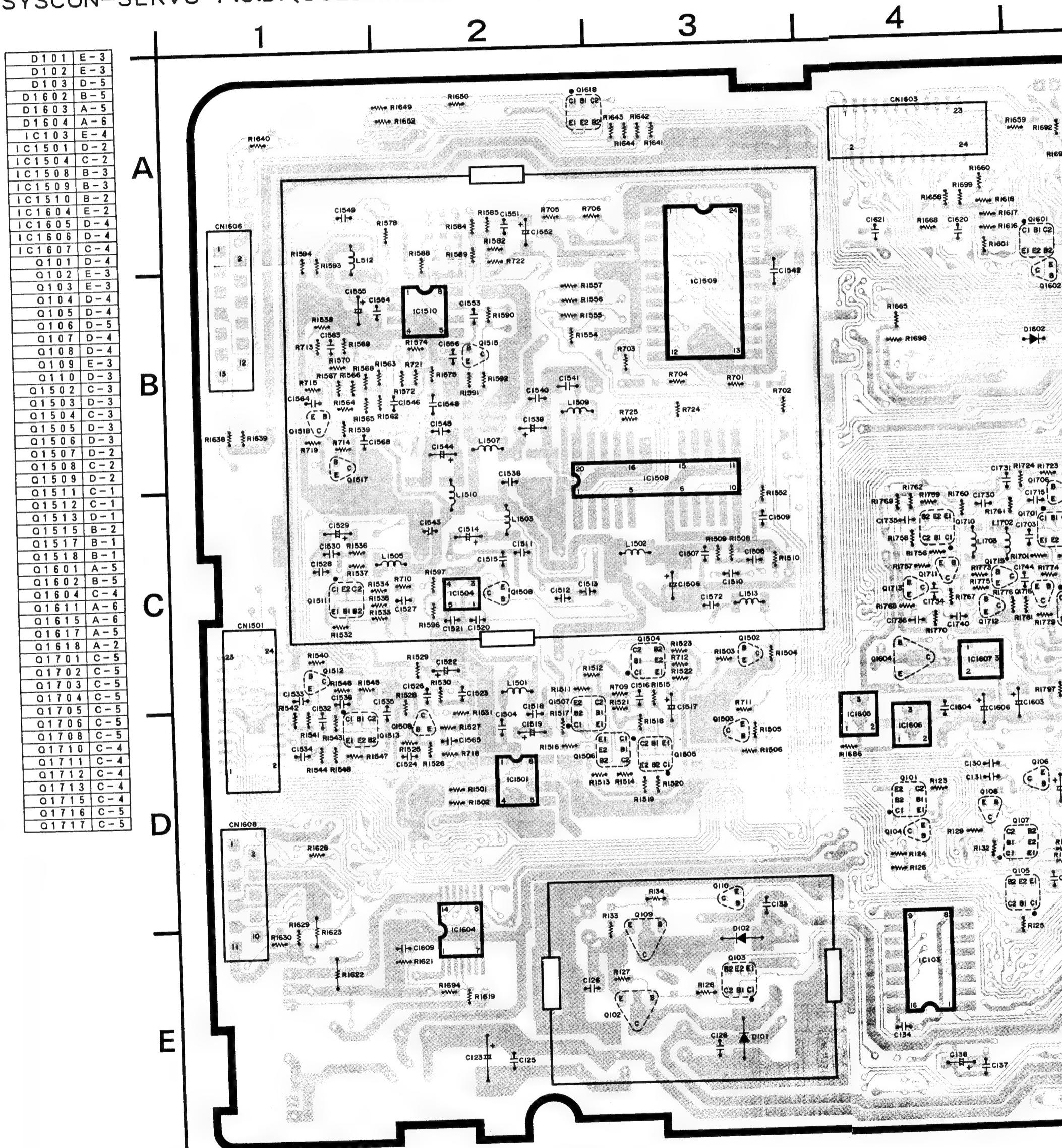
	REC	PB		REC	PB
IC1601-1	0	0	IC1606-1	5.1	5.1
-2	5.1	5.1	-2	0	0
-3	0	5.1	-3	6.0	5.9
-4	5.1	5.1	IC1607-1	5.0	5.0
-5	0	0	-2	5.0	5.0
-6	5.1	5.1	-3	0	0
-7	0	0	Q1601-1	0	4.2
-8	0	0	-2	4.9	0
-9	0	0	-3	0	0
-10	0	0	-4	0	0
-11	0.1	5.0	-5	0	0
-12	0.1	0.1	-6	0	0
-13	5.1	5.1	Q1602-E	0	0
-14	5.1	5.1	-C	0	0
-15	0	0	-B	0	2.7
-16	0	0	-C	5.0	5.0
-17	5.0	5.0	-B	5.3	5.2
-18	0	0	Q1608-E	0	0
-19	0	0	-C	4.9	4.9
-20	0	0	-B	0	0
-21	0	5.0	Q1609-E	0	0
-22	0	0	-C	0	0
-23	0	0	-B	0	5.0
-24	0	0	Q1611-E	0	5.1
-25	0	0	-C	4.9	4.9
-26	0	0	-B	0.5	0.5
-27	4.7	4.7	Q1613-E	0.3	0.3
-28	0	0.3	-C	4.1	4.1
-29	0	0	-B	0.5	0.5
-30	0	0	Q1614-E	5.0	5.0
-31	0	0	-C	0.5	0.5
-32	5.0	5.0	-B	4.7	4.7
-33	0	0	Q1615-1	4.9	0
-34	2.5	2.5	-2	0.5	0
-35	2.5	2.5	-3	0	4.1
-36	5.1	5.1	-4	0.5	0.5
-37	4.4	4.4	-5	4.2	3.4
-38	4.0	4.0	-6	0	5.1
-39	4.9	4.9	Q1616-1	0	0
-40	5.2	0	-2	0	0
-41	5.1	0	-3	0	5.0
-42	4.9	0.1	-4	0	0
-43	4.9	4.9	-5	0	0
-44	2.5	2.5	-6	0	0
-45	2.9	0	Q1617-1	0	0
-46	5.0	5.0	-2	0	0.8
-47	5.0	5.0	-3	4.4	4.2
-48	4.9	0	-4	0.9	0.8
-49	0	0	-5	1.3	1.2
-50	0	0	-6	1.3	1.2
-51	3.0	2.9	Q1618-1	0.3	0
-52	0	0	-2	0.3	0.3
-53	5.1	0	-3	5.0	5.0
-54	5.1	5.1	-4	0.2	0.3
-55	5.0	5.0	-5	0	0
-56	5.0	5.0	-6	0	0
-57	5.1	5.1			
-58	5.1	0			
-59	5.1	5.1			
-60	5.0	5.0			
-61	5.1	0			
-62	5.1	5.1			
-63	0	0			
-64	0	1.3			
-65	0	0			
-66	0.9	0			
-67	4.5	4.5			
-68	0.6	0			
-69	5.1	5.1			
-70	5.1	0			
-71	5.1	0			
-72	5.1	5.1			
-73	0	0			
-74	0	0			
-75	0	0			
-76	0	0			
-77	0	0			
-78	5.1	0			
-79	5.1	0			
-80	5.1	0			
IC1602-1	5.9	5.9			
-2	0	0			
-3	0	0			
-4	4.9	0			
-5	0.6	0.6			
-6	0	3.3			
-7	2.6	2.6			
-8	0	0			
IC1603-1	0	0			
-2	0	0			
-3	0	0			
-4	0	0			
-5	0	0			
-6	0	0			
-7	0	0			
-8	5.1	5.1			
IC1604-1	0	5.9			
-2	0	0			
-3	0	0			
-4	4.3	4.3			
-5	0	0			
-6	0	0			
-7	1.2	1.2			
-8	5.1	5.1			
-9	4.7	4.7			
-10	0.4	0.5			
-11	4.3	4.3			
-12	0.4	0.4			
-13	0	0			
-14	5.6	5.6			
IC1605-1	4.8	4.7			
-2	5.1	5.1			
-3	0	0			

SYS CON-SERVO P.C.B. (1/4) (SYS CON SECTION)





SYSCON-SERVO P.C.B. (SOLDERING SIDE)

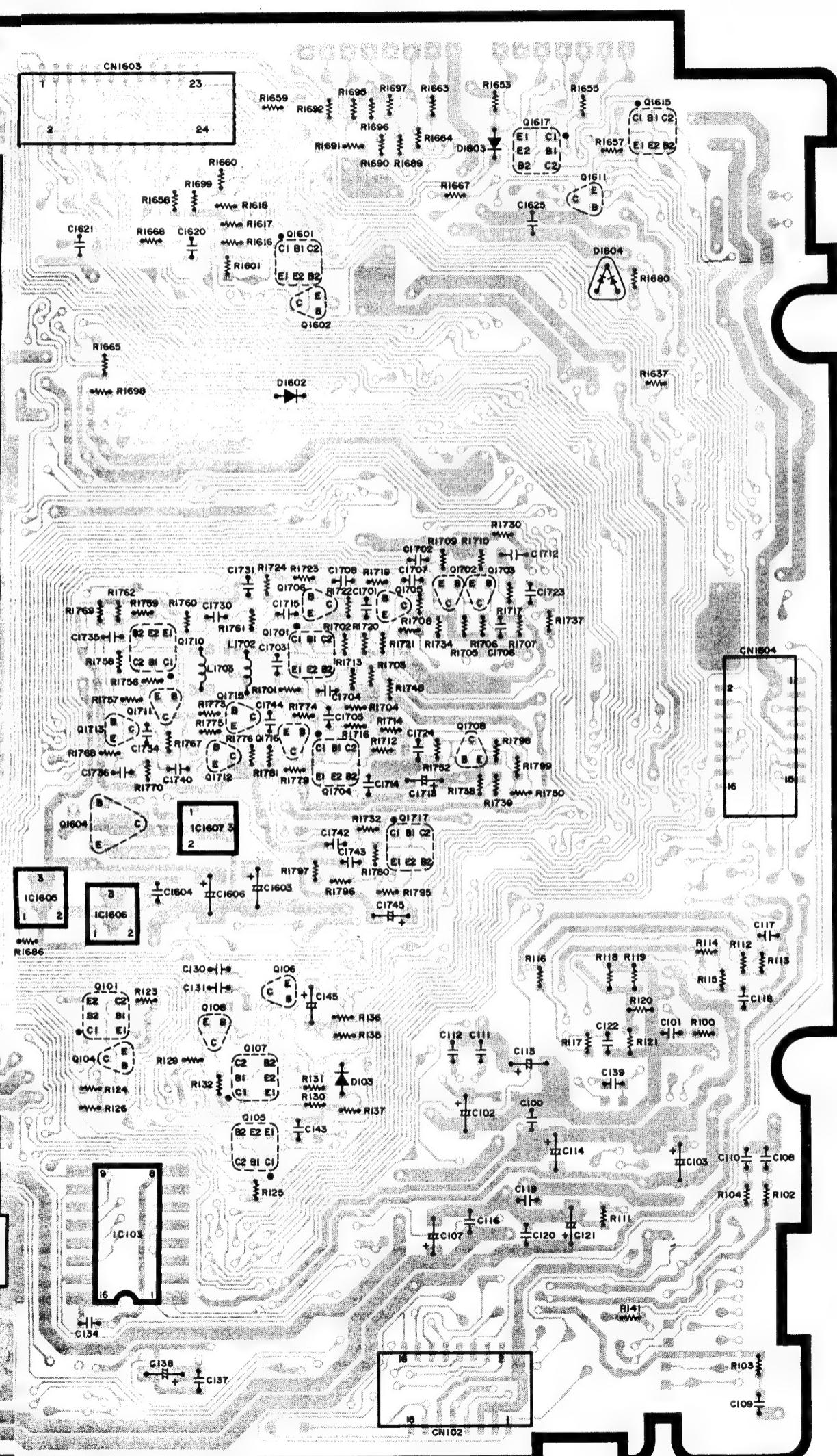


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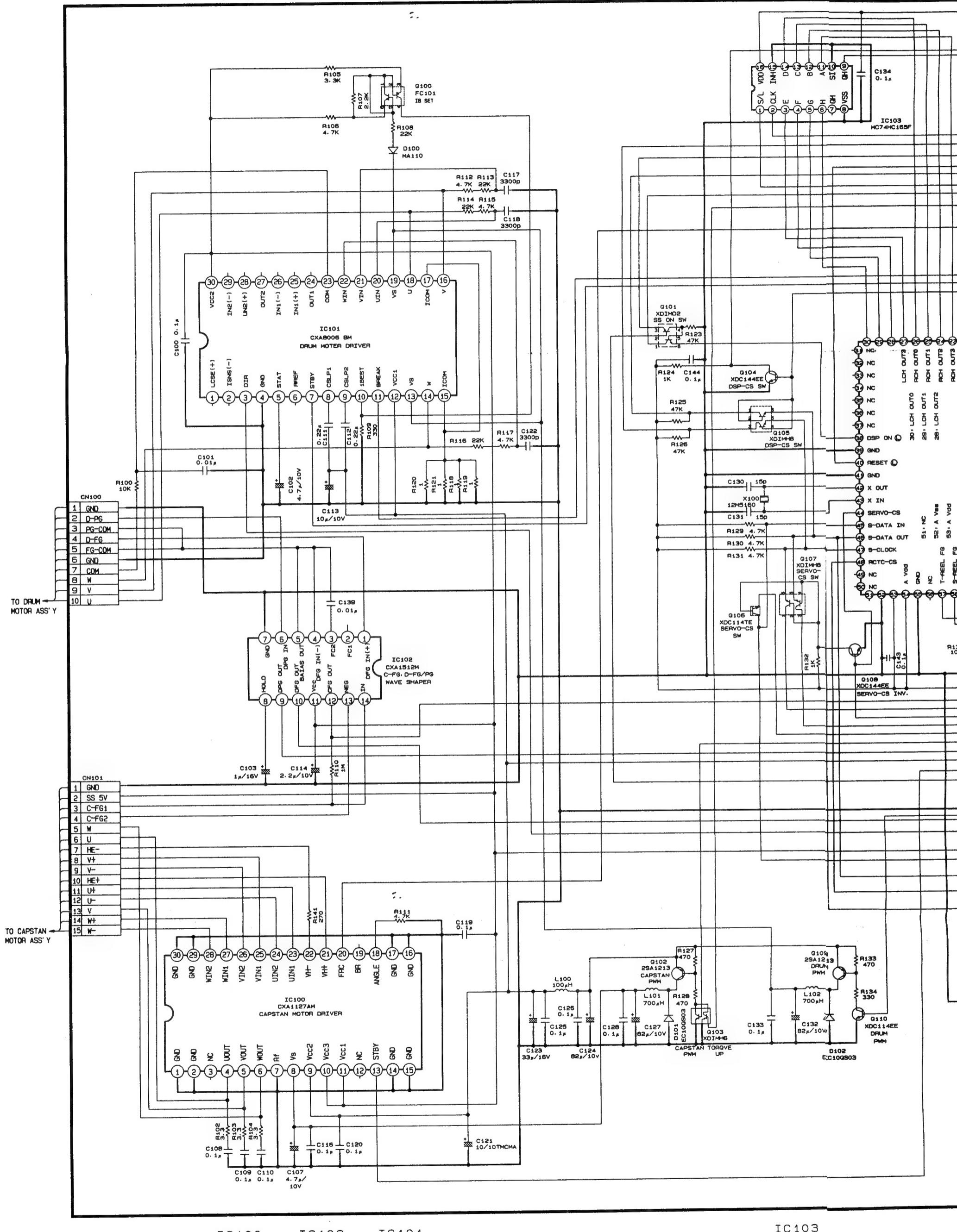
6

**SYSCON-SERVO P.C.B.
MEASURED VALUE (V)
(SERVO SECTION) (RCTC SECTION)**



	REC	PB		REC	PB		REC	PB
IC100-1	0	0		IC104-50	5.0	0	IC1701-1	3.9
-2	0	0		-51	0	0	-2	0
-3	0	0		-52	0	0	-3	0
-4	1.1	1.1		-53	5.0	0	-4	0
-5	1.1	1.0		-54	5.0	0	-5	0
-6	1.1	0		-55	0	0	-6	0
-7	0	0		-56	0	0	-7	0
-8	1.9	0		-57	-	0	-8	0
-9	6.1	5.9		-58	-	0	-9	0
-10	5.0	5.0		-59	0	0	-10	0
-11	5.0	0		-60	0	0	-11	0
-12	0	0		-61	0	0	-12	0
-13	0	0		-62	2.6	2.0	-13	0
-14	0	0		-63	0	0	-14	0.9
-15	0	0		-64	0	0	-15	2.5
-16	0	0		-65	5.0	0	-16	0
-17	0	0		-66	0.3	0	-17	0.24
-18	1.3	1.3		-67	0	0	-18	3.8
-19	0	0		-68	0.2	0	-19	0
-20	5.0	5.0		-69	2.5	0	-20	0
-21	2.0	2.0		-70	2.6	2.6	IC1702-1	5.0
-22	1.0	0		-71	0	0	-2	1.8
-23	1.7	1.7		-72	0	0	-3	1.8
-24	1.7	1.7		-73	0	0	-4	0
-25	1.7	1.7		-74	0	0	-5	0.33
-26	0	1.7		-75	0.9	0	-6	0
-27	1.7	1.7		-76	1.2	0	-7	0
-28	1.7	1.7		-77	2.6	2.6	IC1703-1	5.0
-29	0	0		-78	2.6	2.6	-2	0.13
-30	0	0		-79	0.5	0.5	-3	0.9
-1	0.7	0		-80	0.4	0.5	-4	0.50
-2	0	0		-81	0.1	0.1	-5	4.1
-3	0	0		-82	0	0	-6	0
-4	0	0		-83	0	0	-7	4.8
-5	0.5	0		-84	0	0	-8	5.0
-6	1.3	1.3		-85	0	0	-9	5.0
-7	5.0	5.0		-86	0	0	-10	0
-8	5.2	5.0		-87	5.0	5.0	-11	0
-9	5.2	5.0		-88	0	0	-12	0
-10	0	0		-89	5.0	8.0	-13	0
-11	0	0		-90	5.0	0	-14	0
-12	6.1	5.9		-91	4.9	0	-15	1.0
-13	1.6	1.7		-92	4.9	0	-16	0
-14	0.9	0.9		-93	0	0	-17	5.0
-15	0	0		-94	0	0	-18	0
-16	0.8	0.9		-95	0	2.5	-19	5.0
-17	0	0		-96	0	3.0	-20	0
-18	0.8	0.9		-97	2.5	0	-21	5.0
-19	1.7	1.7		-98	2.3	2.5	-22	0
-20	0.9	0.9		-99	2.5	2.5	-23	2.5
-21	0.8	0.8		-100	5.0	6.0	-24	0
-22	0.9	0.8		Q100-1	4.3	4.3	-25	0
-23	0	0.9		-2	4.3	4.3	-26	0
-24	3.8	3.8		-3	4.9	4.9	-27	0
-25	0.9	0		-4	0	0	-28	0
-26	0.6	0.5		-5	4.3	4.3	-29	0
-27	3.8	3.8		-6	4.6	4.6	-30	2.6
-28	0.7	0.6		Q101-1	6.0	0	-31	0
-29	0.6	0.5		-2	0	0	-32	2.5
-30	5.0	5.0		-3	8.0	5.8	-33	0
-1	2.0	2.0		-4	6.0	5.9	-34	0
-2	2.0	2.0		-5	0	5.9	-35	0
-3	0	0		-6	6.0	0	-36	0
-4	2.0	0		-7	6.0	5.9	-37	0
-5	0	2.0		-8	2.0	0	-38	0
-6	0	0		-9	0.2	0.2	-39	0
-7	0	0		-10	2.5	2.5	-40	5.0
-8	2.0	2.0		-11	0	0	-41	5.0
-9	0.2	0.2		-12	0	2.6	-42	0
-10	2.5	2.5		-13	2.5	2.5	-43	5.0
-11	0	0		-14	0	0	-44	4.6
-12	0	2.6		-15	0	0	-45	4.8
-13	2.5	2.5		-16	0	0	-46	4.8
-14	0	0		-C	3.8	4.8	-47	4.9
-15	0	0		-B	0	0.1	-48	0
-16	5.0	5.0		Q105-1	1.7	4.9	Q1701-1	5.0
-1	0	0		-2	0	0.1	-2	1.5
-3	0	0		-3	1.7	4.9	-3	5.0
-4	0	0		-4	0	0.1	-4	5.0
-5	0	0		-6	4.9	4.9	-5	4.4
-6	0	0		-7	5.0	5.0	-5	0.9
-7	0	0		-8	0	0	Q1702-E	3.8
-8	0	0		-9	0	0	-B	5.0
-10	0	0		-10	0	0	Q1703-E	2.2
-11	0	0		-12	0	0	-C	0
-12	0	0		-13	0	0	-8	4.5
-13	0	0		-14	0	0	Q1704-1	5.0
-14	0	0		-15	0	0	-2	2.2
-15	0	0		-16	0	0	-3	0.5
-16	0	0		-17	0	0	-4	2.3
-17	0	0		-18	0	0	-5	1.8
-19	0	0		-20	5.1	0.1	-6	0.21
-20	0	0		-21	0	2.6	-C	1.9
-21	0	0		-22	0	0	-3	3.3
-22	0	0		-23	0	0	-B	2.5
-23	0	0		-24	0	0	Q1705-E	0.5
-24	0	0		-25	0	0	-C	5.0
-25	0	0		-26	0	0	-B	2.5
-26	0	0		-27	0	0	Q1706-E	1.3
-27	0	0		-28	0	0	-C	5.0
-28	0	0		-29	0	0	-B	1.9
-29	0	0		-30	0	0	Q1707-E	1.8
-31	1.1	0.4		-32	1.2	0.4	-C	3.3
-32	1.2	0.4		-33	1.2	0.4	-B	0
-33	1.1	0.4		-34	1.1	0	Q1708-E	0.5
-34	1.1	0		-35	1.1	0.4	-C	5.0
-35	1.1	0.4		-36	1.1	0	-B	4.8
-36	1.1	0		-37	1.1	0.4	Q1709-E	5.0
-37	1.1	0.4		-38	6.1	0	-C	5.0
-38	6.1	0		-39	0	0	-B	4.4
-39	0	0		-40	5.0	5.0	Q1710-E	5.0
-40</								

SYSCON-SERVO P.C.B. (2/4) (SERVO SECTION)

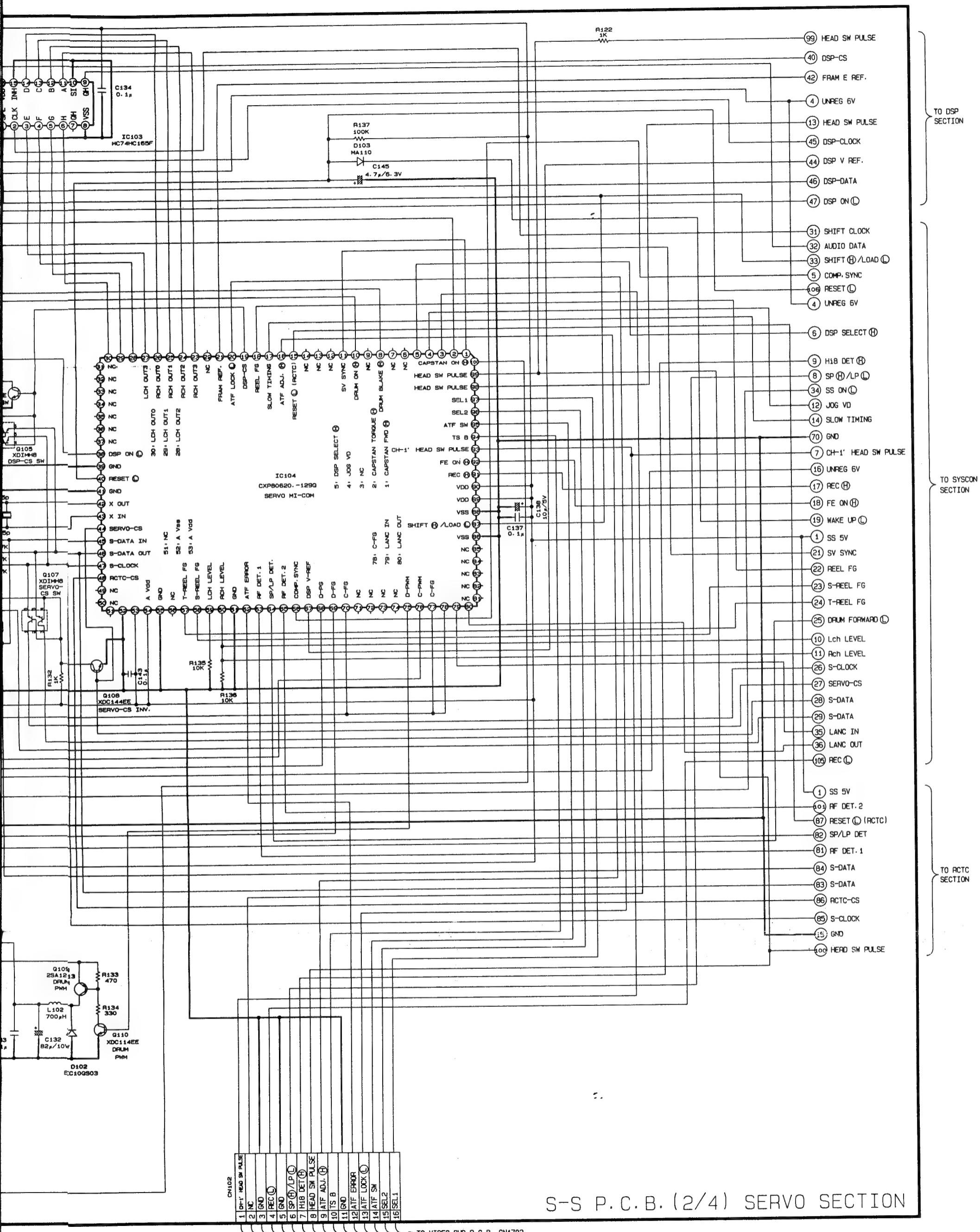


IC100

IC102

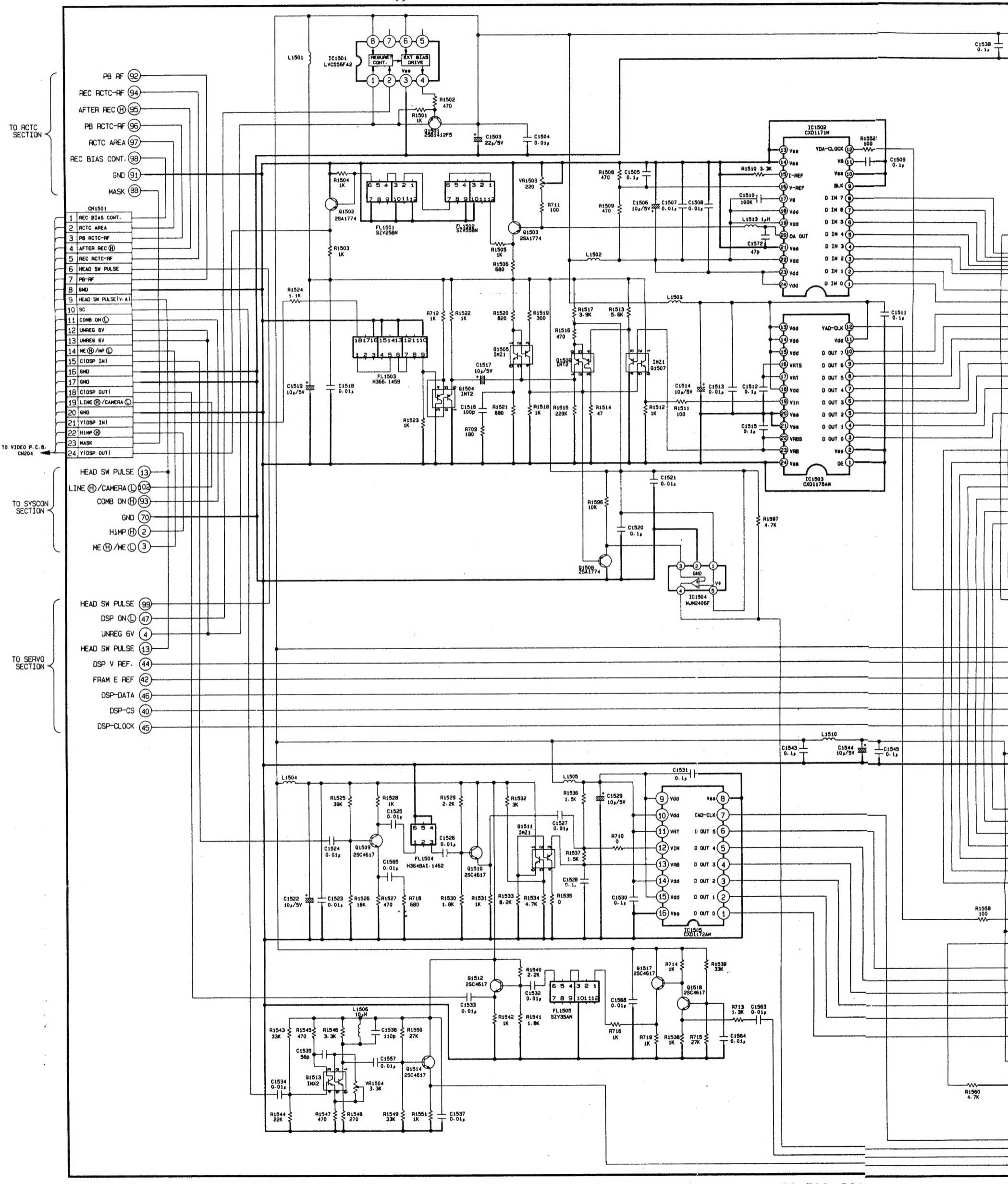
IC101

IC103



S-S P. C. B. (2/4) SERVO SECTION

SYSCON-SERVO P.C.B. (3/4) (DIGITAL-SIGNAL-PROCESS SECTION)

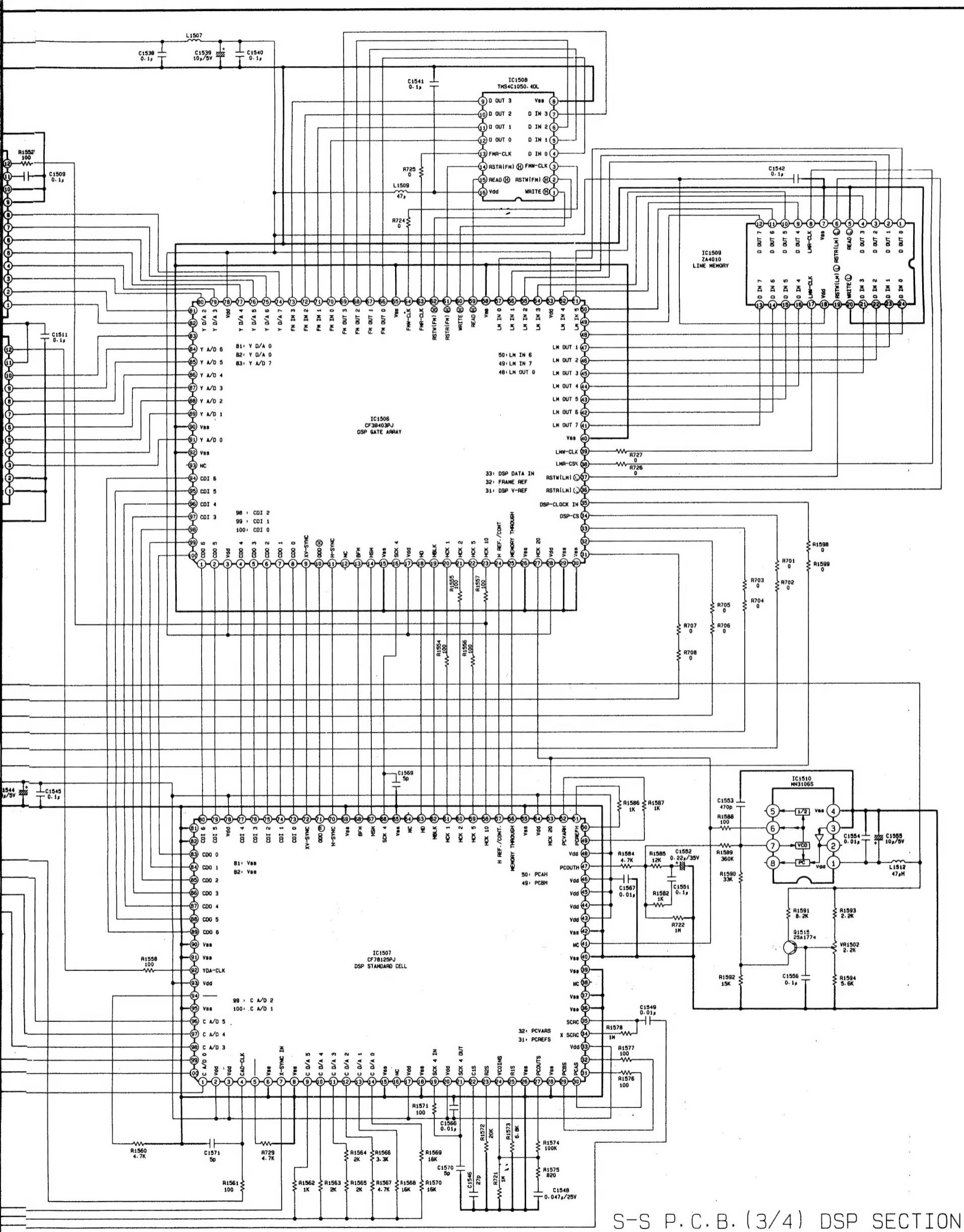


IC1501

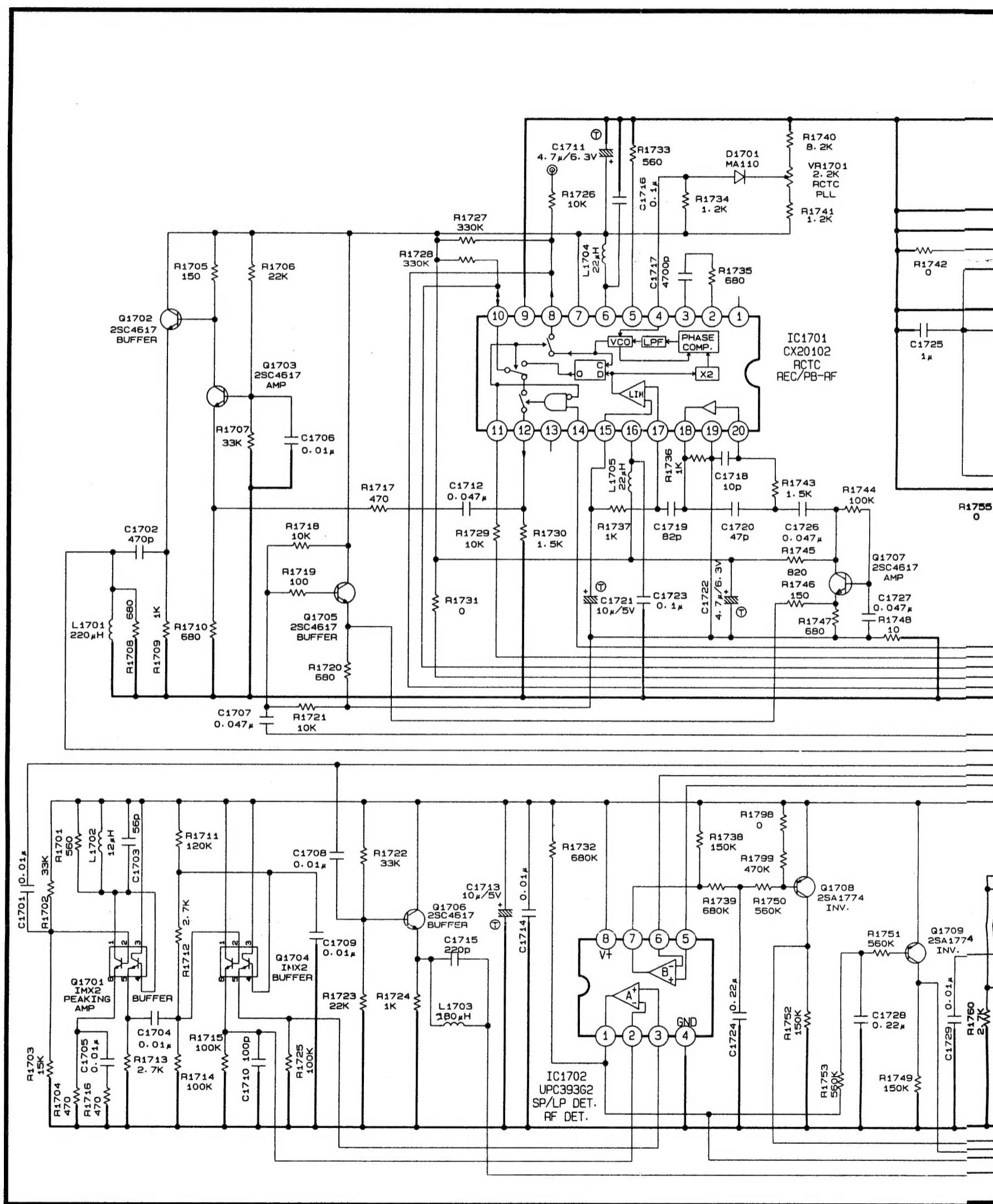
IC1505

IC1502 IC1503

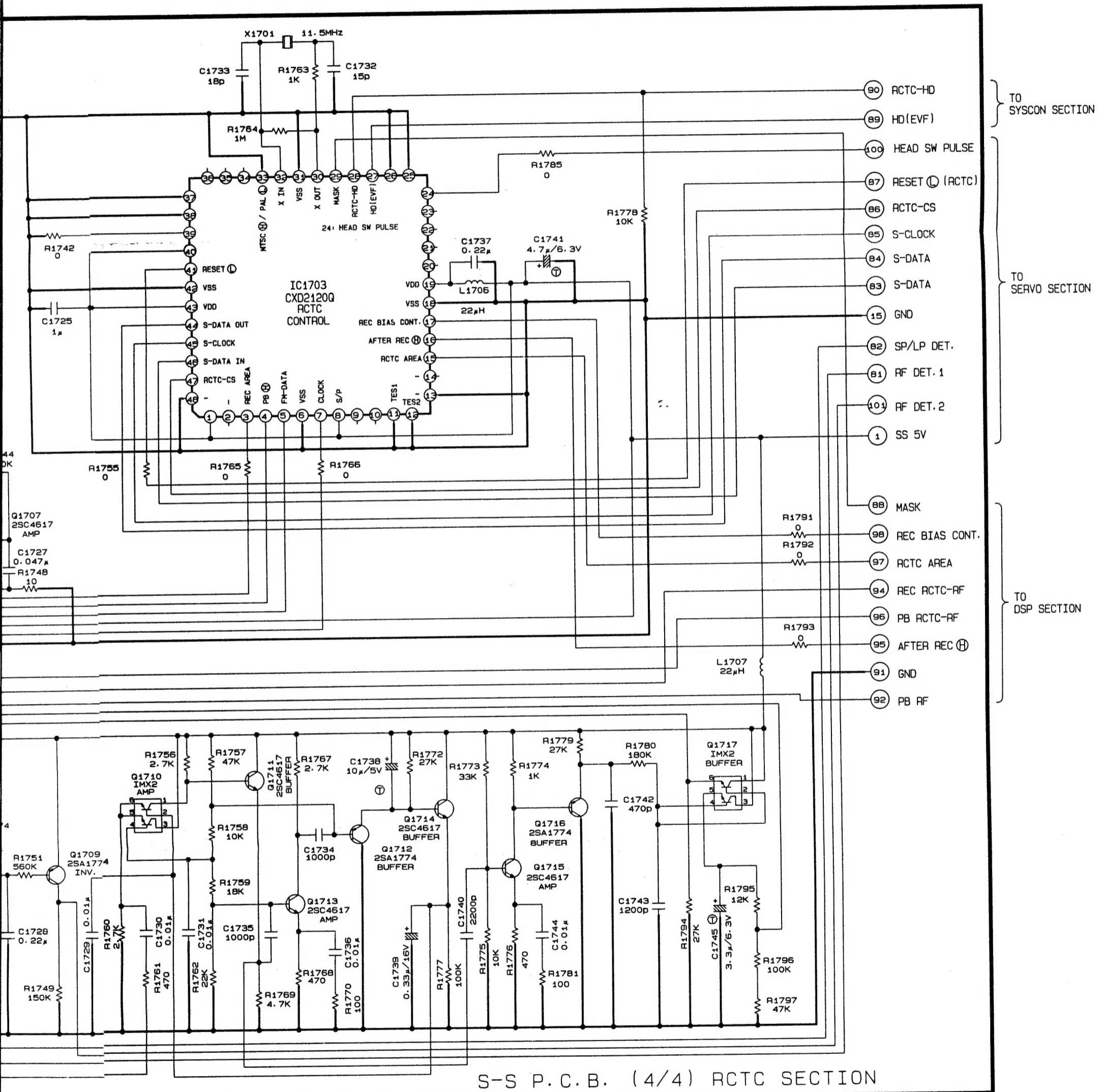
TION)



SYSCON-SERVO P.C.B. (4/4) (RCTC SECTION)



IC1701 IC1702



IC1703